YAMAHA

SCORPIO

(SX-4)

SERVICE MANUAL

a Winanda Fairyanto's collection

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SERVICE MANUAL
SCORPIO
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PENDAHULUAN

Service Manual ini dibuat oleh Yamaha Motor Company, Ltd. dan dialih bahasakan oleh, Technical Publication Yamaha Indonesia diharapkan dapat dipakai oleh Teknisi Bengkel dan Dealer Yamaha Kami menyadari bahwa tidak mungkin menjelaskan seluruh pelajaran teknik perbaikan sepeda motor dalam satu buku saja. sehingga kami meyarankan kepada para mekanik harus terlebih dahulu menguasai dasar-dasar perbaikan sepeda motor Yamaha dengan mengikuti training-training reguler yang diadakan oleh Yamaha. Tanpa pengetahuan ini, usaha perbaikan akan kurang sempurna.

Yamaha Motor Indonesia akan terus menerus berusaha meningkatkan mutu produksinya, untuk itu, jika ada perubahan yang mendasar dalam spesifikasi dan prosedur pengerjaan, kami akan sampaikan ke seluruh jaringan Yamaha melalui buletin "Servioce Information"

TECHNICAL PUBLICATION GROUP 1
SERVICE INFORMATION DIV.
YAMAHA MOTOR CO., LTD

INFORMASI PENTING YANG ADA DIDALAM BUKU PETUNJUK INI :

Informasi penting secara khusus ditandai dengan tanda-tanda sebagai berikut :

⚠ Simbol ini, mengharuskan anda BERHATI-HATI MENYANGKUT KESELAMATAN ANDA !

⚠ PERINGATAN Memberikan petunjuk khusus, yang harus diikuti untuk menghindari kecelakaan bagi pengendara dan orang lain yang sedang memperbaiki sepeda-motor

PERHATIAN Perlu perhatian khusus yang harus diikuti untuk menghindari kerusakan pada sepeda motor.

CATATAN : Memberikan keterangan tambahan, untuk mempermudah pengerjaan.

TEKNIK MEMBACA CEPAT BUKU PETUNJUK

SUSUNAN BUKU PETUNJUK

Buku ini terdiri dari beberapa BAB utama yang didalamnya terdapat beberapa judul (lihat "simbol")

Judul pertama ①: BAB yang disertai simbol, terletak disudut kanan atas, pada setiap halaman.

Judul kedua ②: Judul ini adalah judul bagian BAB yang terletak hanya pada halaman pertama dari tiap-tiap bagian, judul ini terletak disudut kiri atas halaman

Judul ketiga ③: Judul ini adalah judul yang lebih spesifik.

FORMAT BUKU

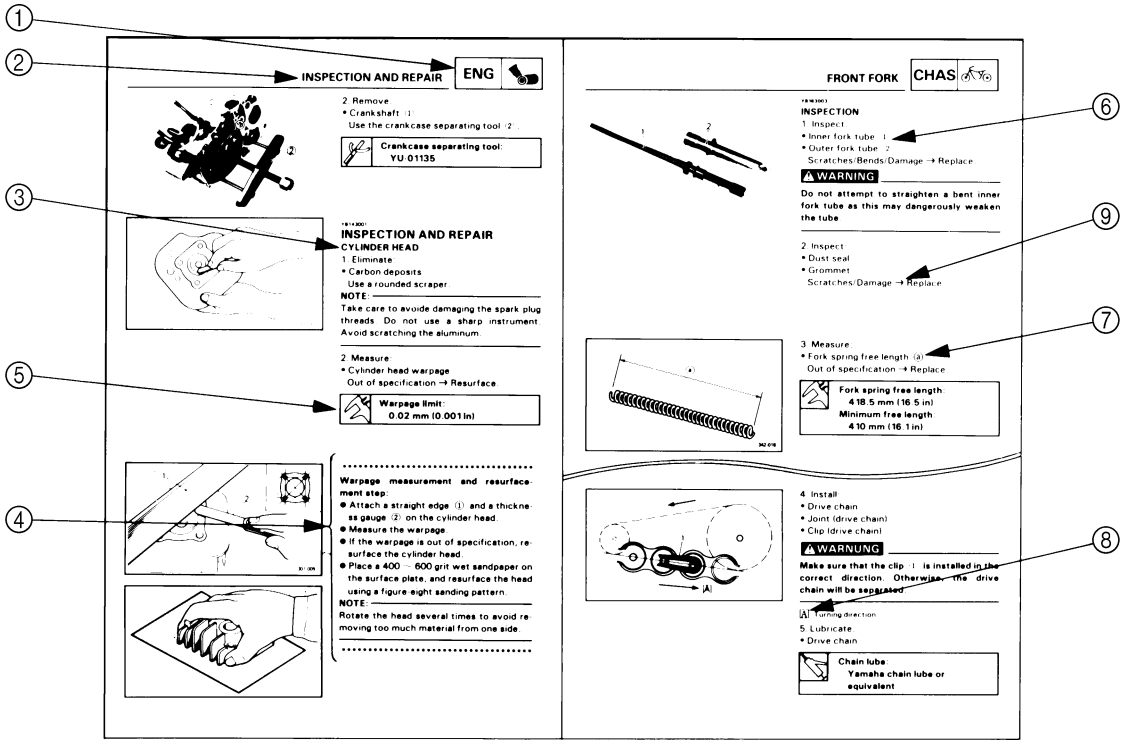
Semua prosedur dalam buku ini, dikemas dalam rangkaian tahap demi tahap, sehingga petunjuk-petunjuk yang ada secara lengkap dapat diterima dengan mudah oleh para mekanik.
Petunjuk yang ada meliputi berbagai hal, antara lain tentang cara membongkar, memperbaiki, dan pemeriksaan, jika ada prosedur yang penting, dan perlu perhatian khusus ④ kami beri garis "✻" dengan tiap-tiap prosedur kami beri tanda "●"

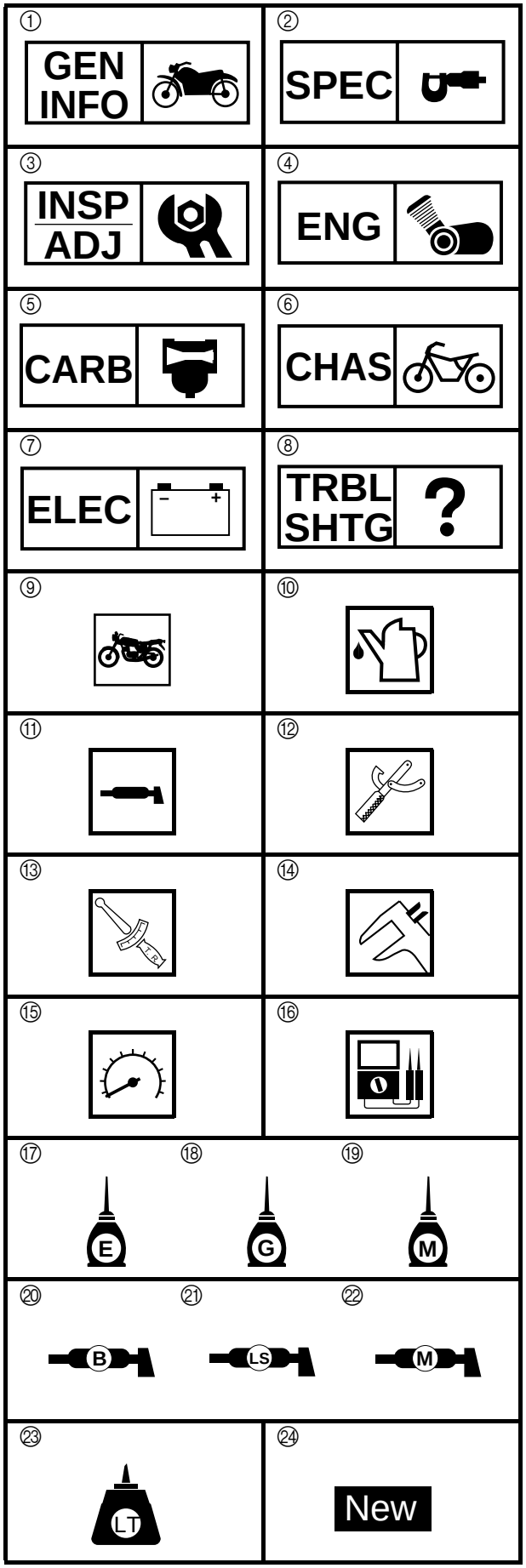
INFORMASI PENTING

- Data spesifikasi dan special tool, diinformasikan dalam frame dengan gambar alat ⑤.
- Angka didalam lingkaran ⑥ menunjukkan nama komponen dan penjelasan yang melengkapi gambar ⑦, ada kalanya kita gunakan huruf didalam segi empat/box ⑧.
- Untuk penjelasan tentang tindakan lebih lanjut, kita gunakan tanda panah. sebagai contoh, tindakan lebih lanjut jika diluar spesifikasi dengan simbol panah ---> ⑨.

DIAGRAM

Semua BAB, dilengkapi dengan gambaran sebelum dibongkar, hal ini untuk mempermudah prosedur yang benar cara memasang dan membongkar.


①
②
③
⑤
④
⑥
⑨
⑦
⑧
INSPECTION AND REPAIR
ENG
2. Remove:
• Crankshaft ①
Use the crankcase separating tool ②.
Crankcase separating tool:
YU-01135
INSPECTION AND REPAIR
CYLINDER HEAD
1. Eliminate:
• Carbon deposits
Use a rounded scraper.
NOTE:
Take care to avoide damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the aluminum.
2. Measure:
• Cylinder head warpage
Out of specification → Resurface.
Warpage limit:
0.02 mm (0.001 in)
Warpage measurement and resurfacement step:
● Attach a straight edge ① and a thickness gauge ② on the cylinder head.
● Measure the warpage.
● If the warpage is out of specification, resurface the cylinder head.
● Place a 400 ~ 600 grit wet sandpaper on the surface plate, and resurface the head using a figure eight sending pattern.
NOTE:
Rotate the head several times to avoid removing too much material from one side.
FRONT FORK
CHAS
INSPECTION
1. Inspect:
• Inner fork tube ①
• Outer fork tube ②
Scratches/Bends/Damage → Replace.
WARNING
Do not attempt to straighten a bent inner fork tube as this may dangerously weaken the tube.
2. Inspect:
• Dust seal
• Grommet
Scratches/Damage → Replace.
3. Measure:
• Fork spring free length (a)
Out of specification → Replace.
Fork spring free length:
418.5 mm (16.5 in)
Minimum free length:
410 mm (16.1 in)
4. Install:
• Drive chain
• Joint (drive chain)
• Clip (drive chain)
WARNUNG
Make sure that the clip ① is installed in the correct direction. Otherwise, the drive chain will be separated.
(A) Turning direction
5. Lubricate:
• Drive chain
Chain lube:
Yamaha chain lube or equivalent



SIMBOL
(sesuai illustrasi)

Illustrasi simbol ① hingga ⑧ merupakan simbol di setiap BAB, yang menggambarkan isi dari setiap BAB.

① Informasi Umum
② Spesifikasi
③ Perawatan berkala dan pelumasan
④ Membongkar mesin
⑤ Karburator
⑥ Rangka/Chassis
⑦ Kelistrikan/Electrical
⑧ Cara mengatasi masalah/Troubleshooting

Illustrasi simbol ⑨ hingga ⑯ menjelaskan sebagai berikut.

⑨ Perbaikan dengan mesin terpasang
⑩ Pengisian cairan
⑪ Pelumasan
⑫ Alat khusus/Special tool
⑬ Pengencangan.
⑭ Bats keausan/kelonggaran
⑮ Putaran mesin
⑯ Ω, V, A

Illustrasi simbol ⑰ hingga ㉔ pada gambar menunjukkan tipe pelumas dan bagian yang perlu dilumasi.

⑰ Lumasi dengan oli mesin
⑱ Lumasi dengan oli gear
⑲ Lumasi dengan molybdenum disulfide oil
⑳ Lumasi dengan gemuk bearing roda
㉑ Lumasi dengan gemuk lightweight lithium-soap base
㉒ Lumasi dengan gemuk molybdenum disulfide
㉓ Berikan cairan pengunci (LOCTITE®)
㉔ Ganti dengan yang baru.

DAFTAR ISI

INFORMASI UMUM	GEN INFO 1
SPESIFIKASI	SPEC 2
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CARBURATOR	CARB 5
RANGKA/CHASSIS	CHAS 6
KELISTRIKAN	ELEC 7
TROUBLESHOOTING	TRBL SHTG 8

BAB 1.
INFORMASI UMUM

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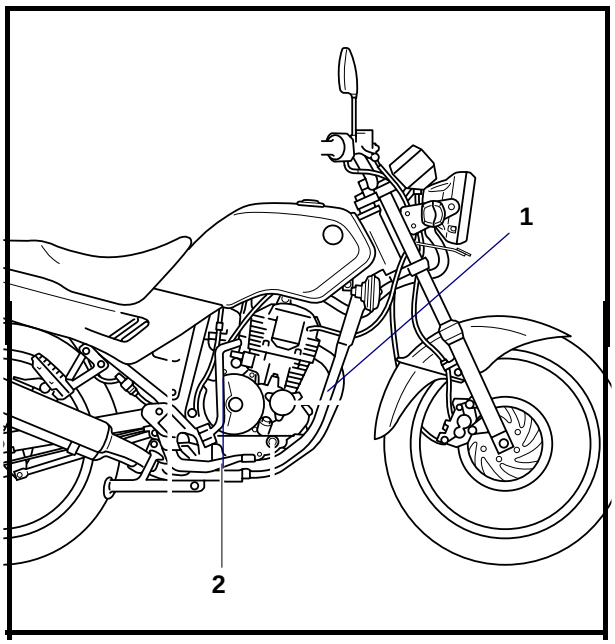


YP100000

INFORMASI UMUM

IDENTIFIKASI SEPEDA MOTOR

YP100020

NOMOR RANGKA/CHASIS

Nomor rangka ① tercetak pada rangka di bagian down tube

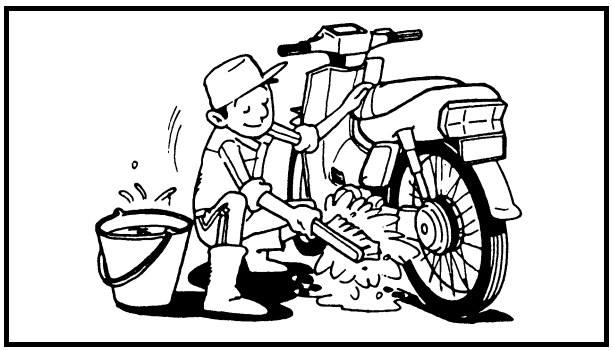
EB100030

NOMOR MESIN

Nomor mesin (2) tercetak pada crankcase mesin sebelah kanan.

CATATAN:

bentuk dan spesifikasi sewaktu-waktu dapat berubah tanpa pemberitahuan.

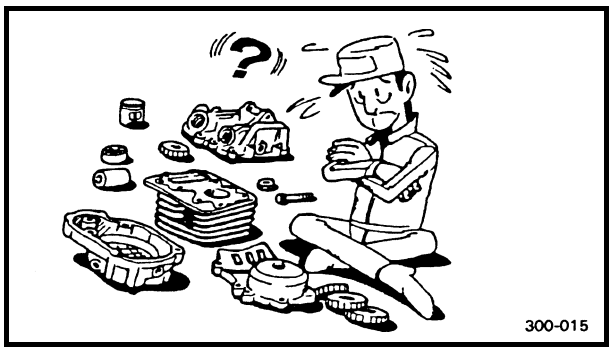


EB101000

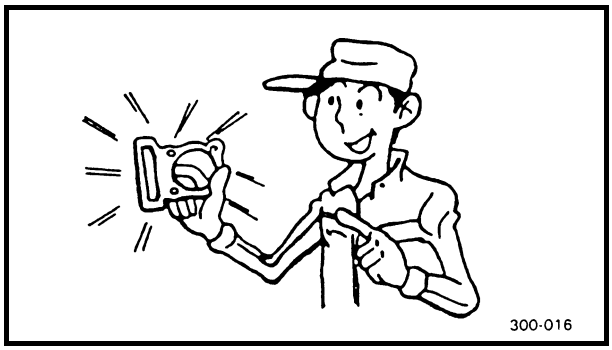
INFORMASI PENTING

PROSEDUR PERSIAPAN MEMBONGKAR

1. Bersihkan dari debu, dan kotoran yang menempel pada sepeda motor
2. Pergunakan peralatan yang tepat dan bersih
3. Lihat bagian “SPECIAL TOOLS”



4. Komponen yang telah dibongkar, tempatkan dalam kondisi terangkai. Misalnya rangkaian gears, cylinders, pistons dan komponen lain yang memerlukan pengepasan. komponen komponen yang bekerja bersamaan, harus diganti lengkap satu set.
5. Pada saat konsdisi komponen part dilepas, bersihkan dari kotoran yang menempel pada komponen, untuk mempermudah dan mempercepat pemasangan kembali.
6. Jaga semua komponern dari pengaruh panas.



EB101010

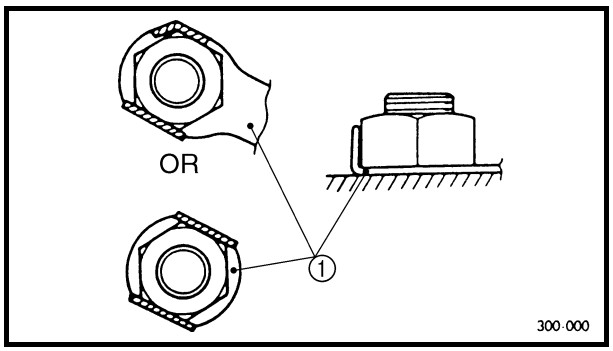
PART PENGGANTI

1. Pergunakan hanya spare part asli Yamaha/ genuine part. pergunakan juga oli dan gemuk yang disarankan Yamaha untuk pelumasan. Komponen imitasi, terlihat sama dengan yang asli, tetapi kualitasnya jauh lebih buruk.

EB101020

GASKETS, SEAL OIL DAN O-RINGS

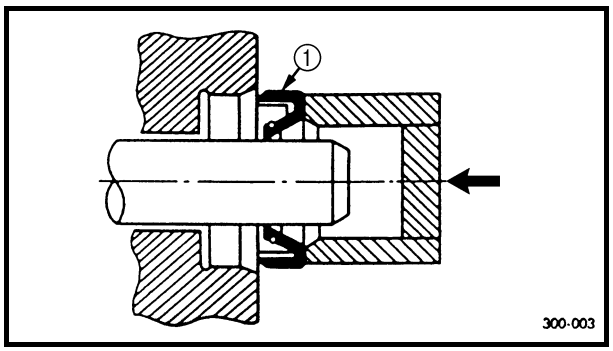
1. Ganti semua gaskets, seals dan O-rings pada saat membongkar mesin. bersihkan gasket yang menempel pada permukaan sambungan dengan sempurna.
2. Lumasi dengan pelumas pada saat memasang bearing. dan lumasi gemuk pada permukaan singgung seal oli.



EB101030

LOCK WASHERS/PLATES DAN COTTER PINS

1. Ganti lock washers/plates dan cotter pin setelah dibuka. Tekuk lock washer plat, di bagian yang rata pada bagian Mur, setelah mur dikencang-sesuai spesifikasi pengencangan.



EB101040

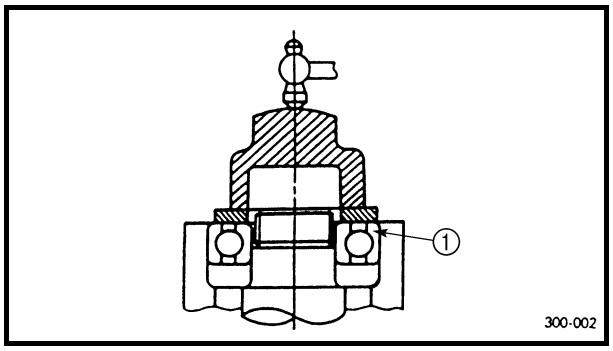
BEARING DAN SEAL OIL

Pasang bearing dan seal oli dengan posisi marking berada di luar. Pada saat memasang seal oli, lumasi dengan gemuk light weight lithium pada-pada permukaan lidah seal. dan pada saat memasang bearings lumasi dengan oli dan pastikan bearing berputar lancar.

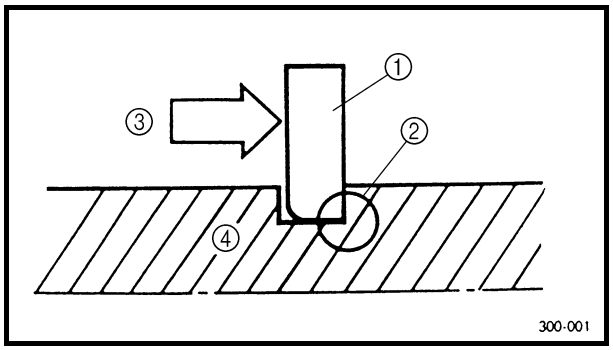
① Oil seal

PERHATIAN

Jangan menggunakan udara bertekanan, untuk membersihkan bearing, hal ini akan merusak permukaan bearing



① Bearing

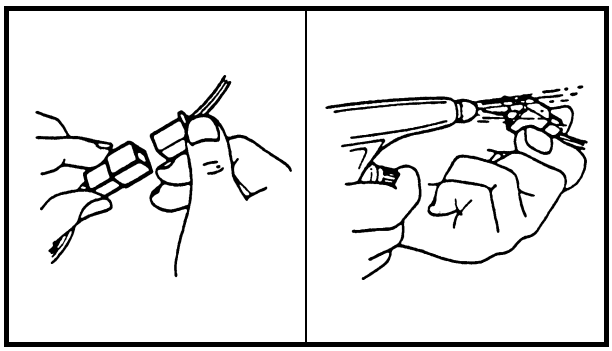


EB101050

CIRCLIPS

1. Periksa dengan seksama circlip, sebelum pemasangan. Selalu ganti circlip pin piston dengan yang baru. Ganti circlip, jika telah rusak Pemasangan circlip ①, pastikan sudut yang tajam pada permukaan tekanan ② berlawanan dengan gaya tekanan ③ lihat gambar penjelasan disamping.

④ As/Shaft

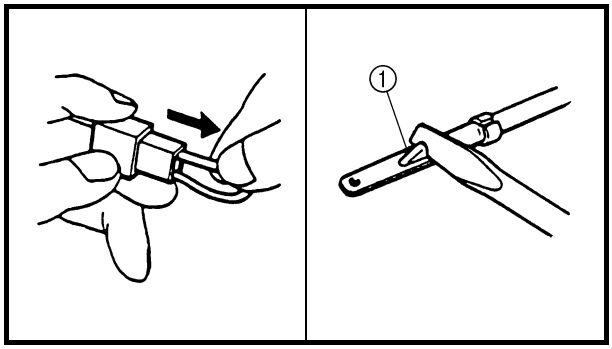


EB801000

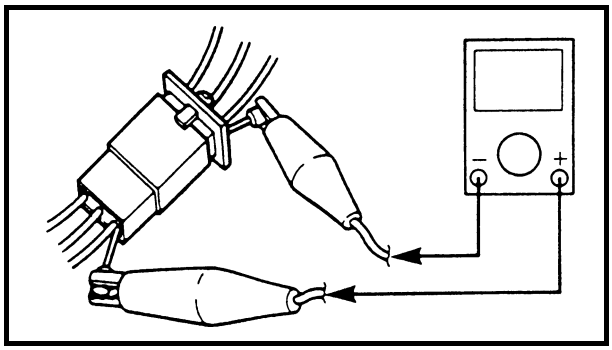
MEMERIKSA SISTIM PENYAMBUNGAN

Bersihkan debu dan kotoran yang terdapat pada pada connector.

1. Lepaskan:
   • Connector
2. Semprot dengan udara bertekanan.



3. Pasang dan cabut connector dua atau tiga kali pemasangan
4. Tarik kabel untuk memeriksa, agar kabel tidak tercabut, terlepas.
5. Jika mudah tercabut, bengkokkan pin pengait ① dan pasangkan kembali ke terminal connector.



6. Pasang:
   • Connector

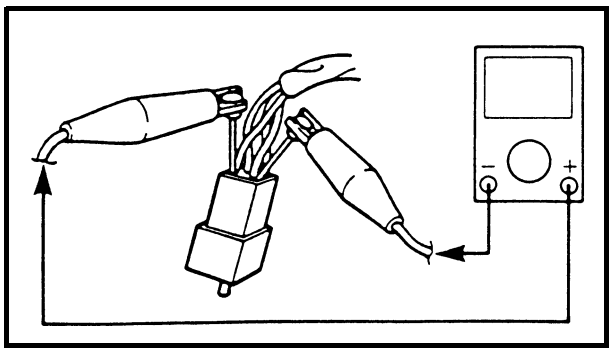
CATATAN:

Kedua connectors harus “click” bersamaan

7. Periksa sistim penyambungan dengan tester.

CATATAN:

- Jika tidak ada sambungan, bersihkan terminal.
- Lakukan langkah pemeriksaan 1 hingga 7 pada saat memeriksa kabel bodi.
- Untuk pemeriksaan, dapat menggunakan tester yang ada di pasaran.
- Pergunakan tester, seperti pada gambar.

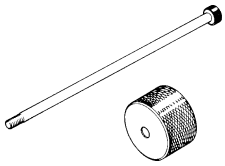
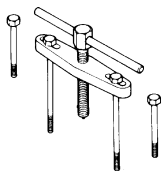
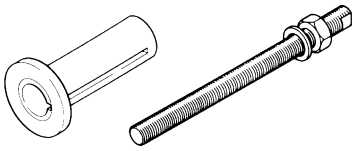
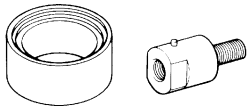
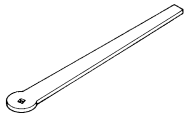
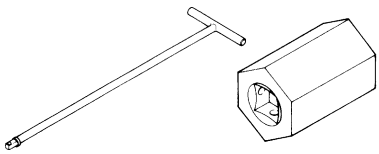


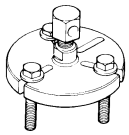
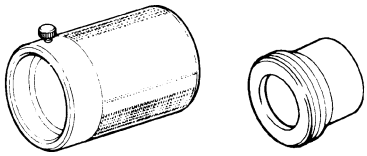
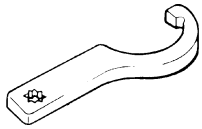
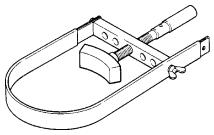
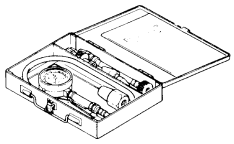
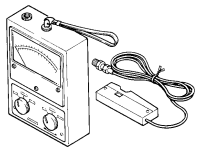
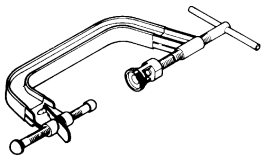
EB102000

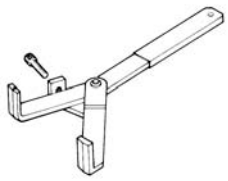
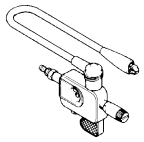
SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools; this will help prevent damage caused by the use of inappropriate tools or improvised techniques.

When placing an order, refer to the list provided below to avoid any mistakes

Nomor tool	Nama tool	Gambar illustrasi
90890-01084 90890-01085	Weight Slide hammer bolt Alat ini digunakan untuk melepas, dan memasang as rocker arm.	
90890-01135	Crankcase separating tool Alat ini digunakan untuk memisahkan crank case.	
Pot 90890-01274 Bolt 90890-01275	Crankshaft installer pot Crankshaft installer bolt Alat ini digunakan untuk memasang poros engkol/crankshaft.	
Spacer 90890-01288 Adapter (M10) 90890-01383	Spacer Adapter (M10) Alat ini digunakan untuk memasang poros engkol/crankshaft.	
90890-01311	Tappet adjusting tool Alat ini digunakan untuk menyetel kelonggaran klep/valve clearance.	
90890-01312	Fuel level gauge Alat ini digunakan untuk mengukur ke-tinggian pelampung kondisi terpasang	
T-handle 90890-01326 Rod holder 90890-04084	T-handle Damper rod holder (19 mm) Alat ini digunakan untuk mengendorkan dan mengencangkan baut damper rod	

Nomor Tool.	Nama Tool	Gambar Illustrasi
90890-01362	Flywheel puller Alat ini digunakan untuk melepas magnet	
Weight 90890-01367 Attachment 90890-01368	Fork seal driver weight Fork seal driver attachment (ø33) Alat ini digunakan untuk memasang seal oli dan seal debu pada fork depan.	
90890-01403	Steering nut wrench Alat ini digunakan untuk mengencangkan, dan mengendorkan baut kemudi/steering	
90890-01701	Sheave holder Alat ini digunakan untuk menahan magnet secondary sheave.	
90890-03081	Compression gauge Alat ini digunakan untuk mengukur tekanan kompresi mesin.	
90890-03112	Pocket tester Alat ini digunakan untuk memeriksa rangkaian kelistrikan.	
90890-03113	Engine tachometer Alat ini digunakan untuk menyetel putaran langsam mesin	
90890-04019	Valve spring compressor Alat ini digunakan untuk memasang, dan melepas rangkaian klep.	

Nomor Tool	Nama Tool	Gambar Illustrasi
90890-04086	Universal clutch holder Alat ini digunakan untuk menahan clutch boss, pada saat memasang dan melepas baut clutch boss nut.	
90890-06754	Ignition checker Alat ini digunakan untuk memeriksa komponen sistim pengapian.	

BAB 2.
SPESIFIKASI

SPESIFIKASI UMUM 2-1

SPESIFIKASI PERAWATAN 2-4
MESIN 2-4
RANGKA/CHASSIS 2-12
KELISTRIKAN 2-15

SPESIFIKASI TORSI UMUM 2-17

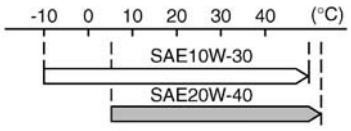
UNIT SATUAN 2-17

POIN PELUMASAN DAN TIPE PELUMAS YANG DIPAKAI 2-18
MESIN 2-18
RANGKA/CHASSIS 2-19

JALUR KABEL 2-20

SPESIFIKASI

SPESIFIKASI UMUM

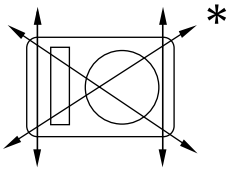
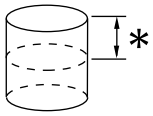
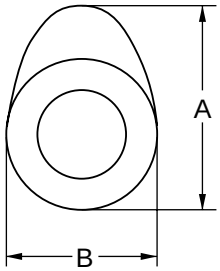
Model	SX-4
Kode model :	5BP1
Dimensi:	
Panjang	2.020 mm
Lebar	770 mm
Tinggi	1.090 mm
Tinggi tempat duduk	770 mm
Jarak sumbu roda	1.295 mm
Jarak ketanah	165 mm
Berat:	
Dengan Oli dan bahan bakar terisi penuh	131 kg
Kemampuan berbelok :	2.100 mm
Mesin :	
Tipe Mesin	pendingin udara 4-tak bensin, SOHC
Susunan Cylinder	Tegak single cylinder
Volume cylinder	223 cm^3
Diameter × Langkah	70 × 58 mm
Perbandingan kompresi	9.5 : 1
Tekanan kompresi	8.5 kg/cm^2/370 r/min
Sistim starter	Motor starter dan kick starter
Sistem pelumasan :	Pelumasan basah
Tipe oli atau grade:	
Oli mesin 	SAE 20W40 tipe SE motor oil (YAMALUBE) (jika temperature dibawah 15°C) SAE 10W30 tipe SE motor oil (jika temperatur diatas 15°C)
Kapasitas oli	
Oli mesin :	
Penggantian berkala	1.2 Liter
Dengan melepas filter oli	1.3 Liter
Kapasitas total	1.4 Liter
Saringan udara:	Element tipe kering
Bahan bakar :	
Tipe	Bensin reguler
Kapasitas tangki bensin :	
Total	12 Liter
Cadangan/Reserve	3 Liter
Karburator:	
Tipe/pabrik pembuat	BS30/MIKUNI

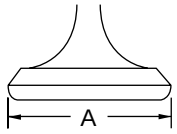
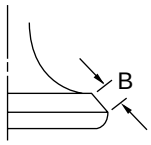
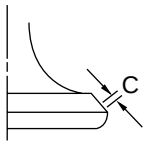
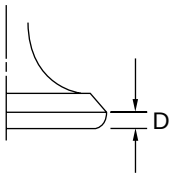
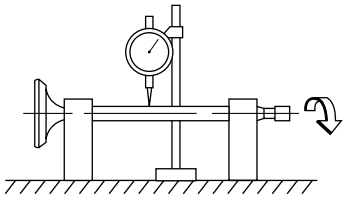
Model	SX-4	
Busi :		
Tipe/pabrik pembuat	D8EA/NGK atau X24ES-U/DENSO	
Gap	0.6 ~ 0.7 mm	
Tipe kopling :	Basah, multiple-disc	
Transmisi :		
Sistim reduksi Primary	Spur gear	
Perbandingan reduksi primary	74/24 (3.083)	
Sistim reduksi secondary	Rantai penggerak	
Perbandingan reduksi secondary	44/15 (2.933)	
Tipe Transmission	Constant mesh, 5-kecepatan	
Operation	Left foot operation	
Gear ratio:		
1st	36/14 (2.571)	
2nd	32/19 (1.684)	
3rd	28/22 (1.273)	
4th	26/25 (1.040)	
5th	23/27 (0.852)	
Chassis:		
Frame type	Double-cradle	
Caster angle	25.3°	
Trail	85 mm	
Tire:		
Type	With tube	
Size (F)	80/100-18 M/C 47P	
Size (R)	100/90-18 M/C 56P	
Wear limit	0.8 mm	
Tire pressure (cold tire):		
Basic weight:		
With oil and full fuel tank	131 kg	
Maximum load *	180 kg	
Cold tire pressure:	FRONT	REAR
Rider	2.00 kg/cm^2	2.00 kg/cm^2
With passenger	2.00 kg/cm^2	2.25 kg/cm^2
	* Load is the total weight of cargo, rider, passenger, and accessories.	
Brake:		
Front	Single disc brake	
Operation	Right hand operation	
Rear	Drum brake	
Operation	Right foot operation	
Suspension:		
Front suspension	Telescopic fork	
Rear suspension	Swing arm	

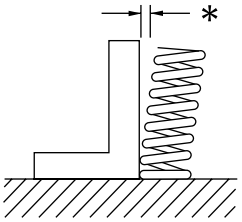
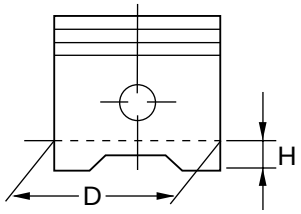
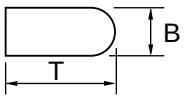
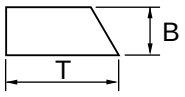
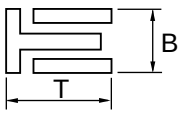
Model	SX-4
Shock absorber:	
Front shock absorber	Coil spring, oil damper
Rear shock absorber	Coil spring, oil damper
Wheel travel:	
Front wheel travel	140 mm
Rear wheel travel	100 mm
Electrical:	
Ignition system	CDI
Generator system	A.C. magneto generator
Battery type or model	GM7B-4B
Battery capacity	12 V 7 AH
Headlight type:	Bulb type
Bulb wattage × quantity:	
Headlight	12 V, 35 W/36.5 W × 1
Auxiliary light	12 V, 3.4 W × 1
Tail/brake light	12 V, 5 W/21 W × 1
Flasher light	12 V, 10 W × 4
Meter light	12 V, 1.7 W × 2
Indicator light:	
“NEUTRAL”	12 V, 3.4 W × 1
“HIGH BEAM”	12 V, 3.4 W × 1
“TURN”	12 V, 3.4 W × 2

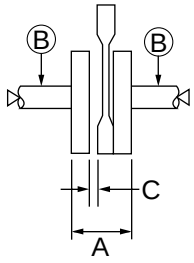
MAINTENANCE SPECIFICATIONS

ENGINE

Model	SX-4
Cylinder head:	
Warp limit ✻ 	<0.03 mm> ✻ Lines indicate straight edge measurement.
Cylinder:	
Bore size/measuring point ✻ 	70.000 ~ 70.018 mm 40 mm
Wear limit	<0.01 mm>
Camshaft:	
Drive method	Chain drive (right)
Camshaft outside dia.	24.96 ~ 24.98 mm
Cam dimensions: 	
Intake:	
"A"	36.52 ~ 36.62 mm
"B"	30.201 ~ 30.301 mm
Exhaust:	
"A"	36.564 ~ 36.664 mm
"B"	30.216 ~ 30.316 mm
Camshaft runout limit	<0.03 mm>
Rocker arm and rocker arm shaft:	
Rocker arm inside diameter	14.992 ~ 15.000 mm
Shaft outside diameter	14.960 ~ 14.981 mm
Arm-to-shaft clearance	0.009 ~ 0.037 mm
Cam chain:	
Cam chain type/no. of links	DID SCR-0404SDH
Cam chain adjustment method	Automatic
Valve, valve seat, valve guide:	
Valve clearance (cold):	
IN.	0.05 ~ 0.10 mm
EX.	0.10 ~ 0.15 mm

Model			SX-4
Value dimensions:			
   			
“A” head dia.		IN.	33.9 ~ 34.1 mm
		EX.	28.4 ~ 28.6 mm
“B” face width		IN.	2.26 mm
		EX.	2.26 mm
“C” seat width		IN.	0.9 ~ 1.1 mm
		EX.	0.9 ~ 1.1 mm
“D” margin thickness		IN.	0.8 ~ 1.2 mm
		EX.	0.8 ~ 1.2 mm
Stem outside dia.		IN.	5.975 ~ 5.990 mm
		EX.	5.960 ~ 5.975 mm
Guide inside dia.		IN.	6.000 ~ 6.012 mm
		EX.	6.000 ~ 6.012 mm
Stem-to-guide clearance		IN.	0.010 ~ 0.037 mm
		EX.	0.025 ~ 0.052 mm
Stem runout limit 			<0.03 mm>
Valve spring:			
Free length	Inner	IN.	36.17 mm
		EX.	36.17 mm
	Outer	IN	36.63 mm
		EX.	36.63 mm
Set length (valve closed)			
	Inner	IN.	30.5 mm
		EX.	30.5 mm
	Outer	IN.	32 mm
		EX.	32 mm
Compressed pressure (installed)			
	Inner	IN.	7.65 ~ 9.35 kg
		EX.	7.65 ~ 9.35 kg
	Outer	IN.	13.1 ~ 16.1 kg
		EX.	13.1 ~ 16.1 kg

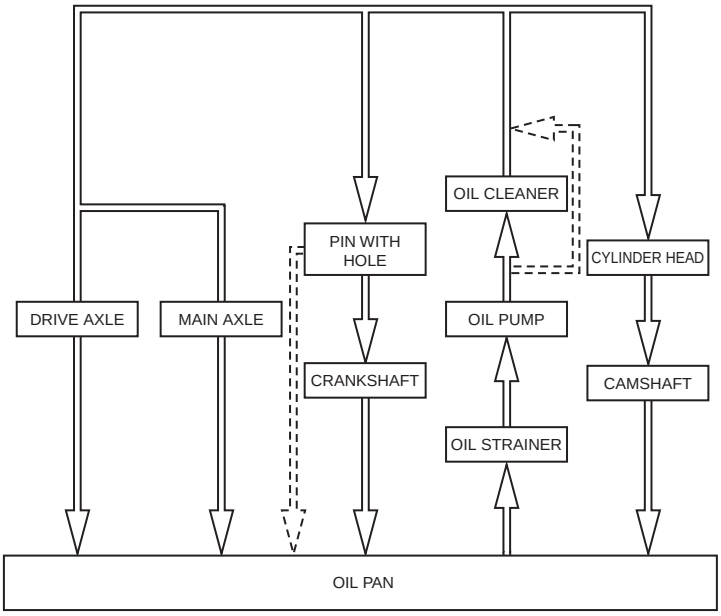
Model		SX-4
Tilt limit *	IN.	<2.5°/1.6 mm>
	EX.	<2.5°/1.6 mm>
		
Direction of winding		
Inner	IN.	Counterclockwise
	EX.	Counterclockwise
Outer	IN.	Clockwise
	EX.	Clockwise
Piston:		
Piston-to-cylinder clearance		0.020 ~ 0.025 mm
<Limit>		<0.05 mm>
Piston size “D”		69.977 ~ 69.996 mm
Measuring point “H”		4 mm
		
Piston ring:		
Top ring:		
Type		Barrel
Dimensions (B × T)		1.2 × 2.8 mm
End gap (installed)		0.15 ~ 0.30 mm
Side clearance (installed)		0.03 ~ 0.07 mm
2nd ring:		
Type		Taper
Dimensions (B × T)		1.2 × 2.8 mm
End gap (installed)		0.15 ~ 0.30 mm
Side clearance		0.02 ~ 0.06 mm
Oil ring:		
Dimensions (B × T)		2.5 × 2.8 mm
End gap (installed)		0.3 ~ 0.9 mm

Model			SX-4
Crankshaft:			
			
Crank width “A”			69.25 ~ 69.30 mm
Runout limit “B”			<0.03 mm>
Big end side clearance “C”			0.35 ~ 0.85 mm
Clutch:			
Friction plate:	Thickness		2.9 ~ 3.1 mm
	Quantity		6 pcs.
	Wear limit		<2.8 mm>
Clutch plate:	Thickness		1.5 ~ 1.7 mm
	Quantity		5 pcs.
	Warp limit		<0.2 mm>
Clutch spring:	Free length		34.9 mm
	Quantity		4 pc.
	Minimum length		<33.2 mm>
Push rod bending limit			<0.5 mm>
Transmission:			
Main axle deflection limit			<0.08 mm>
Drive axle deflection limit			<0.08 mm>
Shifter:			
Shifter type			Cam drum and guide bar
Guide bar bending limit			<0.025 mm>
Carburetor:			
I.D. mark			5BP1 00
Main jet		(M.J.)	#110
Main air jet		(M.A.J.)	#120
Jet needle		(J.N.)	4EL10-2
Needle jet		(N.J.)	O-2
Pilot jet		(P.J.)	#17.5
Pilot air jet		(P.A.J. #1)	#65
		(P.A.J. #2)	1.2
Pilot screw		(P.S.)	3
Pilot outlet		(P.O.)	ø0.8
Bypass		(B.P.1)	ø0.9
		(B.P.2)	ø0.8
		(B.P.3)	ø0.8
Valve seat size		(V.S.)	ø2.0
Starter jet		(G.S.1)	#25
		(G.S.2)	0.7

Model	SX-4
Fuel level	2.7 ~ 4.7 mm below the float chamber line
Engine idling speed	1,350 ~ 1,450 r/min
Lubrication system:	
Oil filter type	Paper and wire mesh type
Oil pump type:	Trochoid type
Tip clearance	0.15 mm
Side clearance	0.04 ~ 0.09 mm

Model	SX-4

Lubrication chart:



Tightening torque

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m·kg	
Camshaft sprocket cover	Bolt	M6	2	10	1.0	
Tappet cover	Bolt	M55	2	18	1.8	
Cylinder head	Flange bolt	M8	4	22	2.2	E
	Bolt	M8	2	20	2.0	
Cylinder head (exhaust pipe)	Stud bolt	M8	4	15	1.5	
Cylinder head bearing plate	Bolt	M6	2	8	0.8	
Cylinder head breather plate	Bolt	M6	3	8	0.8	
Oil pressure checking screw	Screw	M6	1	7	0.7	
Spark plug	–	M12	1	18	1.8	
Rotor (CDI magneto)	Flange bolt	M10	1	60	6.0	
Valve adjusting locknut	Nut	M6	2	14	1.4	
Cam sprocket	Bolt	M10	2	60	6.0	
Chain guide	Bolt	M6	2	8	0.8	G
Chain tensioner	Bolt	M6	2	10	1.0	
	Bolt	M8	1	8	0.8	
Oil pump	Screw	M6	3	6	0.6	
Oil filter cover	Bolt	M6	3	10	1.0	
Oil delivery pipe (crankcase cover)	Union bolt	M10	1	20	2.0	
(cylinder)	Union bolt	M8	1	18	1.8	
Carburetor joint	Bolt	M6	2	10	1.0	
Air filter case (lower)	Bolt	M6	2	6	0.6	
(upper)	Bolt	M6	2	10	1.0	
Exhaust pipe joint (lower)	Flange bolt	M8	2	20	2.0	
Exhaust pipe	Nut	M8	2	18	1.8	
Muffler	Flange bolt	M8	2	30	3.0	
Crankcase	Flange bolt	M6	12	10	1.0	
Crankcase cover (left)	Flange bolt	M6	9	10	1.0	
Crankcase cover (right)	Flange bolt	M6	13	10	1.0	
Magneto lead clamp	Bolt	M5	1	7	0.7	G
Neutral switch lead clamp	Screw	M6	1	7	0.7	
Drain bolt	–	M12	1	20	2.0	
Starter clutch	Bolt	M8	3	30	3.0	State G
Primary drive gear	Nut	M16	1	80	8.0	Use lock washer
Clutch boss	Nut	M14	1	70	7.0	Use lock washer
Clutch spring	Screw	M5	4	6	0.6	
Clutch adjuster locknut	Nut	M6	1	8	0.8	
Clutch push lever	Screw	M8	1	12	1.2	
Drive sprocket	Nut	M18	1	110	11.0	
Shiftcam stopper	Bolt	M6	1	10	1.0	G
Shift arm	Bolt	M6	1	10	1.0	
Neutral switch	–	M10	1	20	2.0	
Stator	Bolt	M6	3	7	0.7	

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m·kg	
Pickup coil	Bolt	M6	2	7	0.7	
Starter motor	Bolt	M6	2	10	1.0	
Kick crank	Bolt	M8	1	20	2.0	
Kick racket wheel guide	Bolt	M6	2	10	1.0	Use lock washer

CHASSIS

Item		SX-4
Steering system:		
Steering bearing type		Angular bearing
Front suspension:		
Front fork travel		140 mm
Fork spring free length		391.5 mm
Spring rate:	K1	0.75 kg/mm
	K2	1.0 kg/mm
Stroke	K1	0 ~ 95 mm
	K2	95 ~ 140 mm
Optional spring		No.
Oil capacity		252 cm^3
Oil level		95 mm From top of fully compressed inner tube without fork spring
Oil grade		Yamaha fork oil 10W or equivalent
Rear suspension:		
Shock absorber travel		32 mm
Spring rate:	K1	16.01 kg/mm
Stroke:	K1	0 ~ 32 mm
Optional spring		No.
Swingarm:		
Swingarm free play limit:	End	<1 mm>
Swingarm free play limit:	Side	<1 mm>
Front wheel:		
Type		Spoke wheel
Rim size		1.85 × 1.60
Rim material		Steel
Rim runout limit:	Vertical	<2 mm>
	Lateral	<2 mm>
Rear wheel:		
Type		Spoke wheel
Rim size		1.85 × 2.15
Rim material		Steel
Rim runout limit:	Vertical	<2 mm>
	Lateral	<2 mm>
Drive chain:		
Type/manufacturer		428 V/DAIDO
No. of links		118
Drive chain slack		20 ~ 30 mm

Item	SX-4
Front disc brake:	
Disc brake type	Single
Disc outside diameter × thickness	267 × 4
<Limit>	<3.5 mm>
Brake pad lining thickness	5.3 mm
<Limit>	<0.8 mm>
Master cylinder inside diameter	11 mm
Caliper cylinder inside diameter	26.99 mm
	22.22 mm
Recommended fluid	DOT 3 or 4
Rear drum brake:	
Type	Leading and trailing
Drum inside diameter	130 mm
<Limit>	<131 mm>
Lining thickness	4 mm
<Limit>	<1 mm>
Shoe spring free length	50.5 mm
Brake lever and brake pedal:	
Brake lever free play	2 ~ 5 mm
Brake pedal free play	20 ~ 30 mm
Clutch lever:	
Clutch lever free play	10 ~ 15 mm

Tightening torque

Part to be tightened	Thread size	Tightening torque		Remarks
		Nm	m·kg	
Handle crown and inner tube	M8 × 1.25	23	2.3	
Handle crown and steering stem	M22 × 1.0	110	11.0	
Steering stem and ring nut	–	18	1.8	See NOTE
Handle crown and upper holder	M8 × 1.25	19	1.9	
Master cylinder	M6 × 1.0	7	0.7	
Engine stay and engine	M10 × 1.25	58	5.8	
Engine stay and frame	M8 × 1.25	30	3.0	
Engine mounting (rear-lower) and frame	M10 × 1.25	79	7.9	
Engine mounting (rear-upper) and frame	M10 × 1.25	58	5.8	
Engine mounting (front) and frame	M10 × 1.25	58	5.8	
Tension bar and swingarm	M8 × 1.25	16	1.6	
Kick starter and frame	M10 × 1.25	52	5.2	
Front wheel axle	M14 × 1.5	58	5.8	
Front brake disc	M6 × 1.0	23	2.3	
Front brake caliper	M10 × 1.25	30	3.0	
Brake hose union bolt	M10 × 1.25	26	2.6	
Brake caliper bleed screw	M7 × 1.0	6	0.6	
Rear wheel axle	M14 × 1.5	85	8.5	
Sprocket and wheel hub	M8 × 1.25	30	3.0	
Tension bar and rear brake shoe plate	M8 × 1.25	16	1.6	
Brake lever camshaft	M6 × 1.0	10	1.0	
Fuel sender and fuel tank	M5 × 0.8	4	0.4	
Footrest and footrest bracket	M8 × 1.25	30	3.0	
Footrest bracket and brake pedal	M10 × 1.25	30	3.0	
Footrest bracket and frame	M8 × 1.25	30	3.0	
Rear footrest bracket and frame	M8 × 1.25	30	3.0	
Pivot shaft	M12 × 1.25	59	5.9	
Rear shock absorber (upper)	M12 × 1.25	59	5.9	
Rear shock absorber (lower)	M12 × 1.25	59	5.9	
Relay arm and frame	M12 × 1.25	59	5.9	
Relay arm and connecting rod	M12 × 1.25	59	5.9	
Connecting rod and frame	M12 × 1.25	59	5.9	
Chain case and swingarm	M6 × 1.0	7	0.7	
Chain guide and swingarm	M6 × 1.0	7	0.7	

NOTE:

1. First, tighten the ring nut approximately 48 Nm (4.8 m • kg) by using the torque wrench, then loosen the ring nut one turn.
2. Retighten the ring nut 18 Nm (1.8 m • kg).

ELECTRICAL

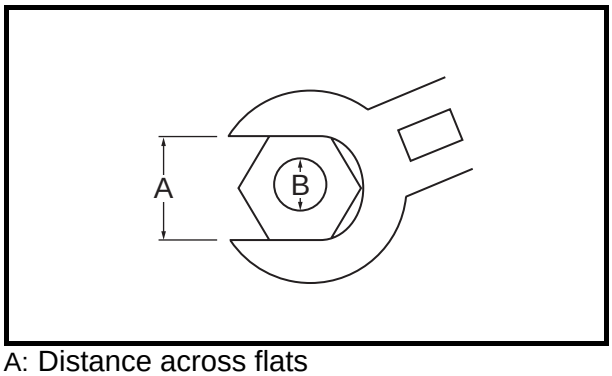
Item	SX-4
Voltage:	12 V
Ignition system:	
Ignition timing (B.T.D.C.)	5° at 1,450 r/min
Advancer type	Electrical
CDI:	
Pickup coil resistance (color)	248 ~ 372 Ω at 20°C (Red - White)
Source coil resistance	688 ~ 1,032 Ω at 20°C (Brown - Green)
CDI. unit-model/manufacturer	5BP/YAMAHA
Ignition coil:	
Model/manufacturer	5BP/YAMAHA
Primary winding resistance	0.32 ~ 0.48 Ω at 20°C
Secondary winding resistance	5.68 ~ 8.52 kΩ at 20°C
Spark plug cap resistance	10 kΩ
Charging system/type:	A.C. magneto generator
CDI magneto:	
Model/manufacturer	F5BP/YAMAHA
Nominal output	14 V, 100 W at 5,000 r/min
Lighting coil resistance	0.24 ~ 0.36 Ω at 20°C (Yellow/Red - Black)
Charging coil resistance	0.32 ~ 0.48 Ω at 20°C (White - Black)
Rectifier/regulator:	
Model/manufacturer	SH656-12/SHINDENGEN
No load regulated voltage (DC)	14.1 ~ 14.9 V
Capacity	8 A
Battery:	
Capacity:	12 V, 7AH
Specific gravity	1.280
Electric starter system:	
Type	Constant mesh type
Starter motor:	
Model/manufacturer	5BP/YAMAHA
Output	0.4 kW
Brush	
Overall length	10 mm
<Limit>	<3.5 mm>
Spring pressure	560 ~ 840 g
Commutator:	
Outside diameter	22 mm
<Wear limit>	<21 mm>
Mica undercut	1.5 mm

Item	SX-4
Horn:	
Type/quantity	Plain type × 2
Model/manufacturer	5BP/IMASEN
Maximum amperage	1.5 A
Flasher relay:	
Type	Condenser type
Model/manufacturer	3RS/DENSO
Self cancelling device	No
Flasher frequency	75 ~ 95 cycle/min
Wattage	10 W × 2 + 3.4 W
Starting circuit cut-off relay:	
Model/manufacturer	ACA12115-3/MATSUSHITA
Diode	Yes
Circuit breaker:	
Type	Fuse
Amperage for individual circuit × quantity:	
Main	15 A × 1
Reserve	15 A × 1

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads.
Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multifastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications		
		Nm	m·kg	ft·lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94



A: Distance across flats
B: Outside thread diameter

DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm cm	millimeter centimeter	10^{-3} meter 10^{-2} meter	Length Length
kg	kilogram	10^{3} gram	Weight
N	Newton	1 kg × m/sec^2	Force
Nm m • kg	Newton meter Meter kilogram	N × m m × kg	Torque Torque
Pa N/mn	Pascal Newton per millimeter	N/m^2 N/mn	Pressure Spring rate
L cm^3	Liter Cubic centimeter	–	Volume or capacity
r/min	Rotation per minute	–	Engine speed

LUBRICATION POINTS AND LUBRICANT TYPE

ENGINE

Lubrication	Symbol	Lubricant type
Oil seal lip	LS	Lithium-soap base grease
O-Ring	LS	Lithium-soap base grease
Bearing	E	Engine oil
Cylinder head bolt/washer	E	Engine oil
Rocker shaft	M	Molybdeum disulfide oil
Crankshaft pin	E	Engine oil
Connecting rod	E	Engine oil
Piston surface	E	Engine oil
Piston pin	E	Engine oil
Camshaft cam lobe/journal	E	Engine oil
Valve stem (IN, EX)	M	Molybdeum disulfide oil
Valve stem end (IN, EX)	M	Molybdeum disulfide oil
Cam chain/cam sprocket	E	Engine oil
Oil pump shaft, rotor (IN, OUT), housing	E	Engine oil
Kick shaft	E	Engine oil
Kick idle sprocket (inside)	E	Engine oil
Kick crank shaft	LS	Lithium-soap base grease
Kick idle gear/kick gear	E	Engine oil
Starter clutch	E	Engine oil
Primary driven gear	E	Engine oil
Push lever axle	M	Molybdeum disulfide oil
Transmission gear (wheel/pinion)	M	Molybdeum disulfide oil
Axle (main/drive)	M	Molybdeum disulfide oil
Shift cam	M	Molybdeum disulfide oil
Shift fork/guide bar	E	Engine oil
Crankcase mating surfaces		Yamaha bond No.1215®

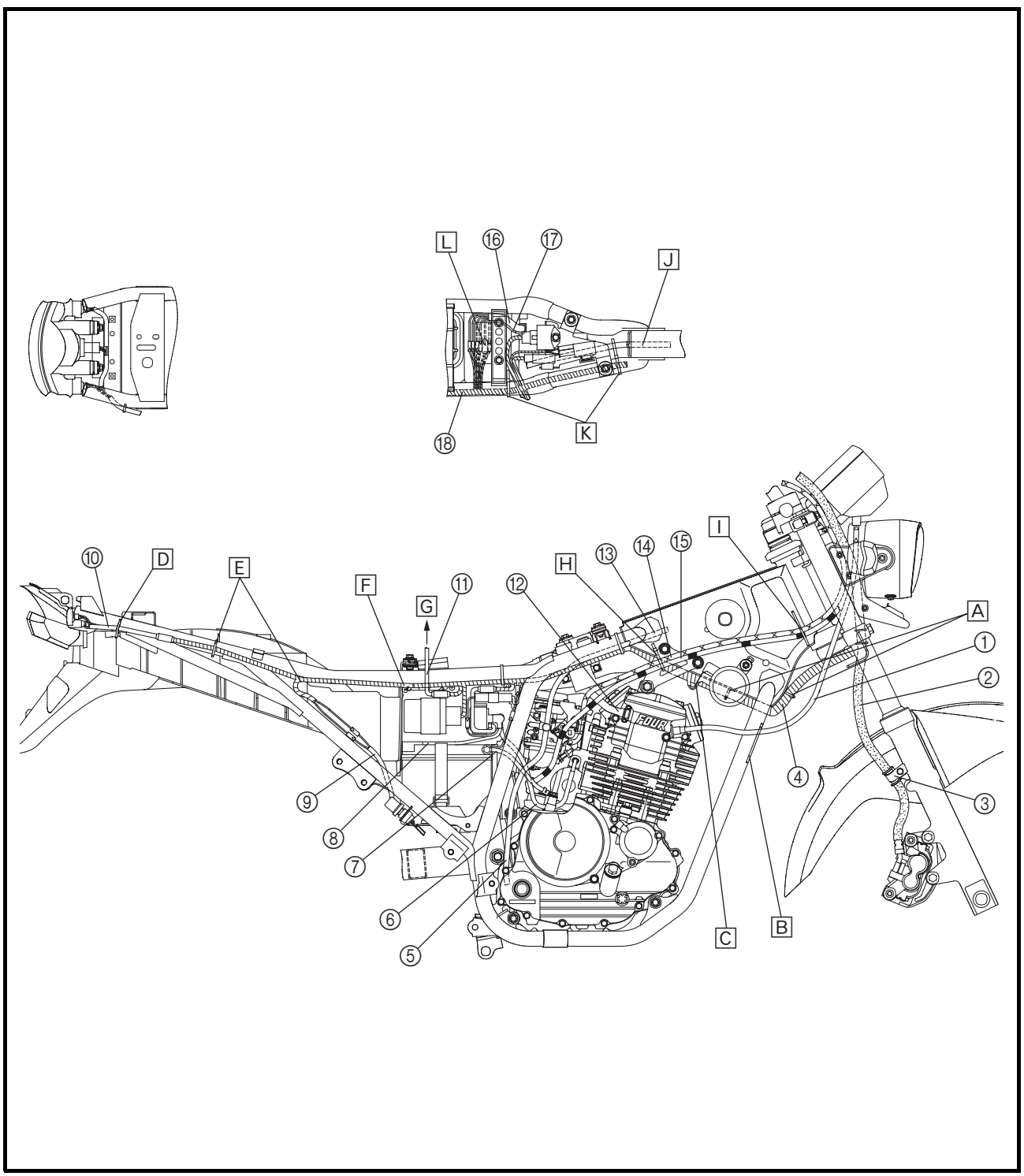
CHASSIS

Lubrication	Symbol	Lubricant type
Steering bearing (upper/lower)	LS	Lithium-soap base grease
Wheel bearing/axle	LS	Lithium-soap base grease
Front wheel oil seal (right/left)	LS	Lithium-soap base grease
Rear wheel oil seal	LS	Lithium-soap base grease
Clutch hub oil seal	LS	Lithium-soap base grease
Clutch hub fitting area	LS	Lithium-soap base grease
Rear brake pedal shaft	LS	Lithium-soap base grease
Change pedal	LS	Lithium-soap base grease
Side/main stand sliding surface	LS	Lithium-soap base grease
Tube guide (throttle grip) inner surface	LS	Lithium-soap base grease
Brake lever bolt, sliding surface	LS	Lithium-soap base grease
Clutch lever collar, sliding surface	LS	Lithium-soap base grease
Swingarm pivot/bearing	LS	Lithium-soap base grease
Rear shock absorber bolt	LS	Lithium-soap base grease
Relay arm color/oil seal	LS	Lithium-soap base grease
Speedometer gear unit	LS	Lithium-soap base grease
Rear brake camshaft	LS	Lithium-soap base grease
Brake shoe plate pivot	LS	Lithium-soap base grease

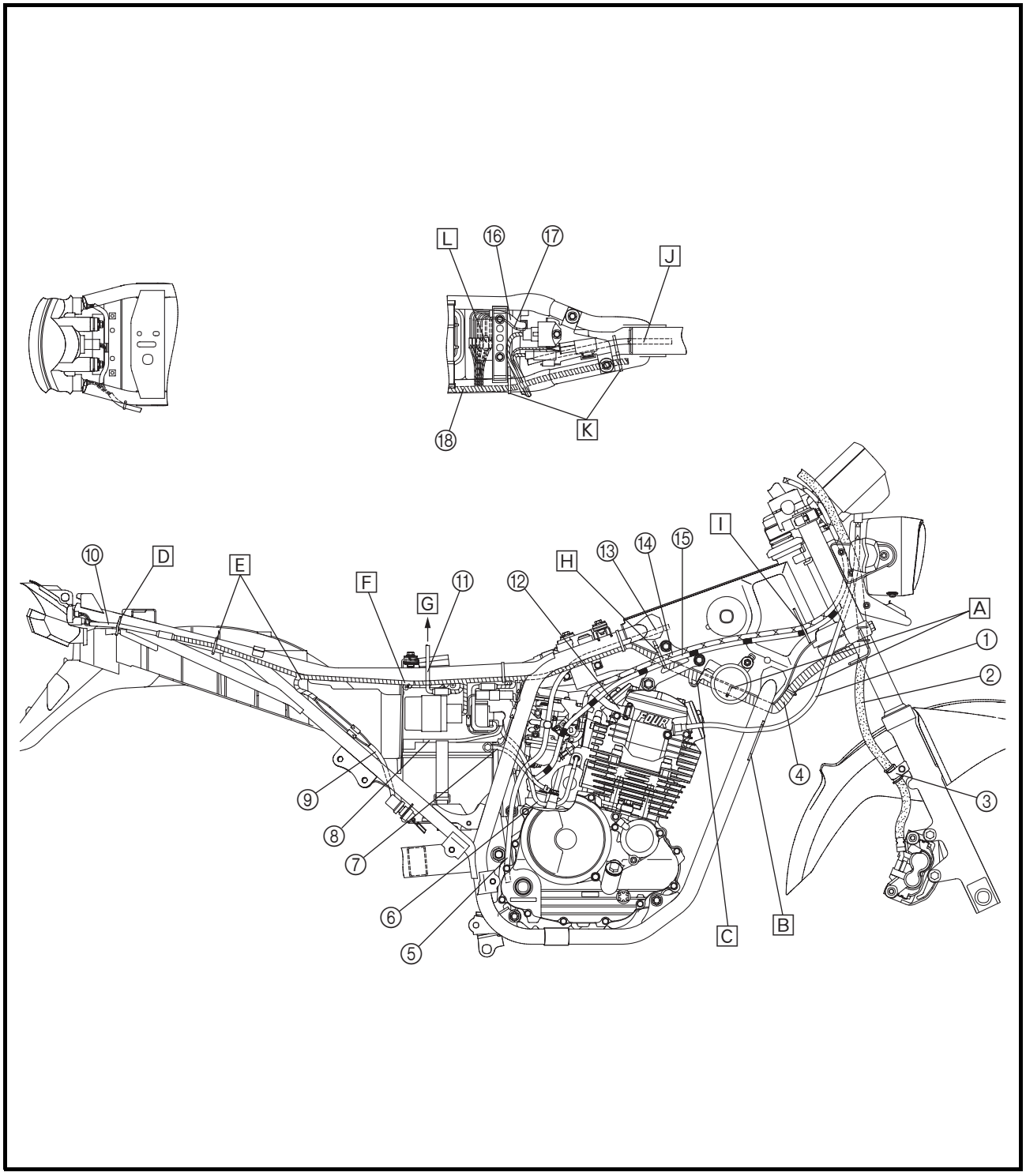
CABLE ROUTING

① Tachometer cable
② Brake hose
③ Brake hose holder
④ Wire harness
⑤ Air vent hose
⑥ Starting motor lead
⑦ Battery negative lead
⑧ Battery positive lead
⑨ Rear brake switch lead
⑩ Taillight lead
⑪ Fuel sender lead
⑫ Breather hose
⑬ Air vent hose
⑭ Throttle cable
⑮ Clutch cable
⑯ Magneto lead
⑰ Pick-up coil lead
⑱ Wire harness

A Clamp the wire harness.
B Pass the cable holder through the tachometer cable.
C Install the horn lead (short side) to the right side of the horn.
D Clamp the taillight lead.
E Clamp the wire harness.
F Clamp the wire harness at the white tape portion.

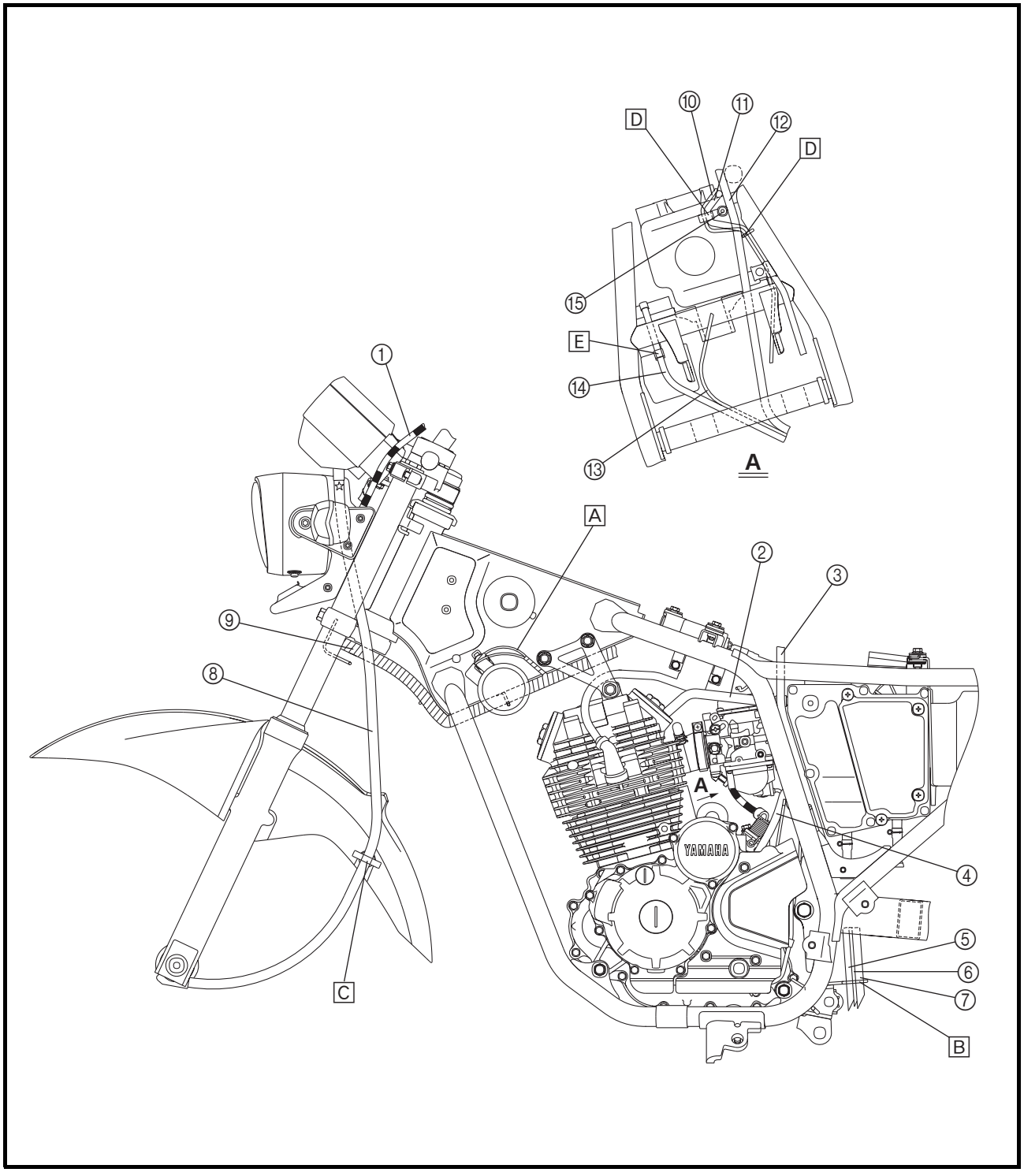


G To fuel tank
H Clamp the throttle cable and clutch cable. Turn the clamp end to inside of motorcycle.
I Clamp the throttle cable and clutch cable.
J Insert the air vent hose into the frame.
K Clamp the wire harness and turn the clamp end to inside of motorcycle.
L Clamp the magneto lead and pick-up coil lead and push the leads into holder.



① Clutch cable
② Breather hose
③ Fuel tank over flow hose
④ Magneto lead
⑤ Battery breather hose
⑥ Carburetor over flow hose
⑦ Fuel tank over flow hose
⑧ Speedometer cable
⑨ Wire harness
⑩ Pick-up coil lead
⑪ Magneto lead
⑫ Fuel tank over flow hose

[A] Install the horn lead (long side) to the left side of the horn
[B] Clamp the battery breather hose, carburetor over flow hose and fuel tank over flow hose.
[C] Pass the speedometer cable through the holder
[D] Clamp the magneto lead and pick-up coil lead.
[E] Clamp the battery breather hose.



BAB 3.
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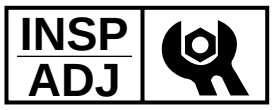
PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to vehicles already in service as well as new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

PERIODIC MAINTENANCE/LUBRICATION

NO.		ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1,000 km)				
				0.5	2	4	8	12
1	*	Fuel line	• Check fuel hoses for cracks or damage.		○	○	○	○
2	*	Fuel filter	• Check condition. Replace if necessary.		○	○	○	○
3		Spark plug	• Check condition. • Clean and regap.	○	○	○	○	○
			• Replace if necessary.			○		○
4	*	Valves	• Check valve clearance. • Adjust.	○	○	○	○	○
5		Air filter element	• Clean. Replace if necessary.		○	○	○	○
6	*	Battery	• Check electrolyte level and specific gravity. • Make sure that the breather hose is properly routed.		○	○	○	○
7		Clutch	• Check operation. • Adjust.	○	○	○	○	○
8	*	Front brake	• Check operation, fluid level and vehicle for fluid leakage. • Replace brake pads if necessary.	○	○	○	○	○
9	*	Rear brake	• Check operation and adjust brake pedal free play. • Replace brake shoes if necessary.	○	○	○	○	○
10	*	Wheels	• Check runout, spoke tightness and for damage. • Tighten spokes if necessary.		○	○	○	○
11	*	Wheel bearings	• Check bearing for looseness damage.		○	○	○	○
12	*	Swingarm	• Check operation and for excessive play.		○	○	○	○
			• Lubricate with lithium-soap based grease, every 24,000 km.					
13		Drive chain	• Check chain slack. • Make sure that the rear wheel is properly aligned. • Clean and lubricate.	**Every 500 km and after washing the motorcycle or riding in the rain.**				
14	*	Steering bearings	• Check bearing play and steering for roughness.	○	○	○	○	○
			• Lubricate with lithium-soap-based grease, every 12,000 km.					
15	*	Chassis fasteners	• Make sure that all nuts, bolts and screws are properly tightened.		○	○	○	○
16		Sidestand/center-stand	• Check operation. • Lubricate.	○	○	○	○	○
17	*	Front fork	• Check operation and for oil leakage.		○	○	○	○
18	*	Shock absorber assembly	• Check operation and shock absorber for oil leakage.		○	○	○	○
19	*	Rear suspension relay arm and connecting arm pivoting points	• Check operation.		○	○	○	○
			• Lubricate with lithium-soap-base grease, every 24,000 km.					

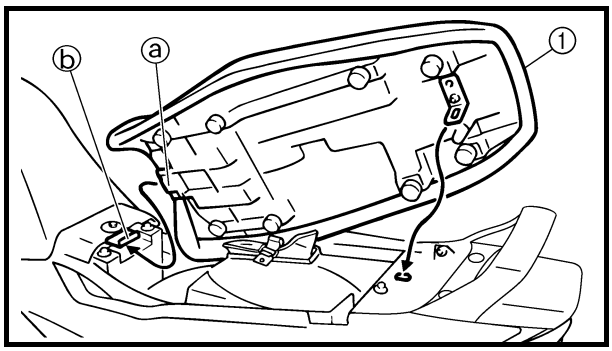


NO.		ITEM	CHECK OR MAINTENANCE JOB	ODOMETER READING (× 1,000 km)				
				0.5	2	4	8	12
20	*	**Carburetor**	• Check starter (choke) operation. • Adjust engine idling speed.	○	○	○	○	○
21		**Engine oil**	• Change.	○	○	○	○	○
22		**Engine oil filter element**	• Clean.	○		○		○
23	*	**Engine oil strainer**	• Clean.					○
24	*	**Front and rear brake switches**	• Check operation.	○	○	○	○	○
25		**Moving parts and cables**	• Lubricate.		○	○	○	○
26	*	**Lights, signals and switches**	• Check operation. • Adjust headlight beam.	○	○	○	○	○

*Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

NOTE:

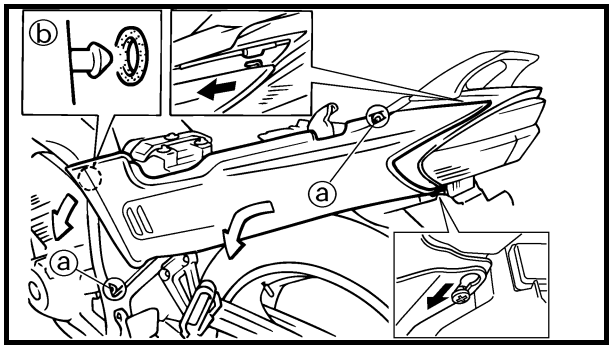
- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake systems
  - After disassembling the brake master cylinder, and caliper cylinder, always change the fluid. Regularly check the brake fluid levels and fill the reservoirs as required.
  - Replace the oil seals on the inner parts of the brake master cylinder and caliper cylinder every two years.
  - Replace the brake hose every four years or if cracked or damaged.



SEAT

1.Install:
- Seat ①

NOTE:
Insert the projection ⓐ on the front of the seat into the seat holder ⓑ as shown.

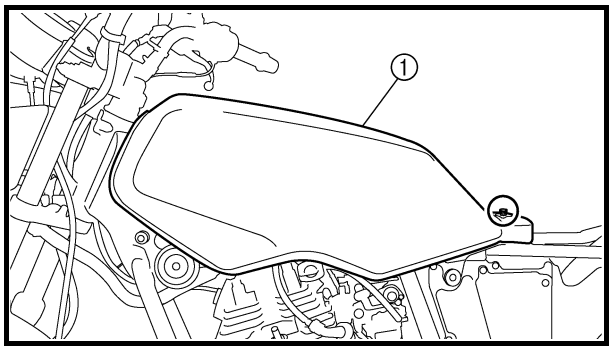


SIDE COVER

1.Remove:
- Seat

2.Remove:
- Side covers (left and right)

NOTE:
Remove screws ⓐ and knob ⓑ, and then pull the side cover off as shown.



FUEL TANK

1.Remove:
- Air scoop (left and right)
- Bolt
- Washer
- Fuel sender coupler
- Breather hose
- Fuel hose
- Fuel tank ①

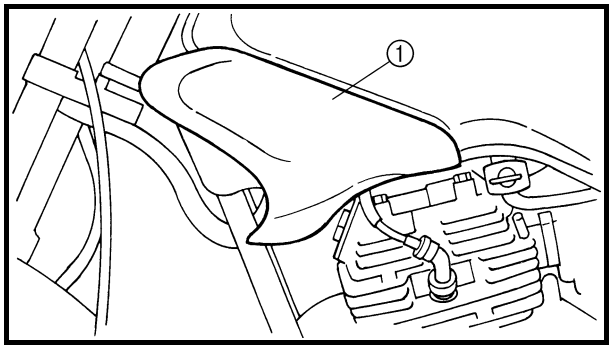
NOTE:
Turn the fuel cock to “OFF” position before removing fuel hose.

ENGINE

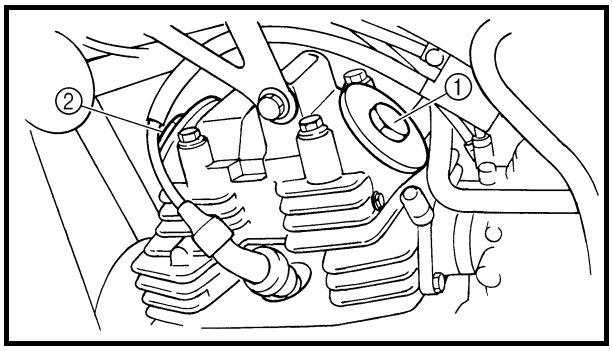
VALVE CLEARANCE ADJUSTMENT

NOTE:

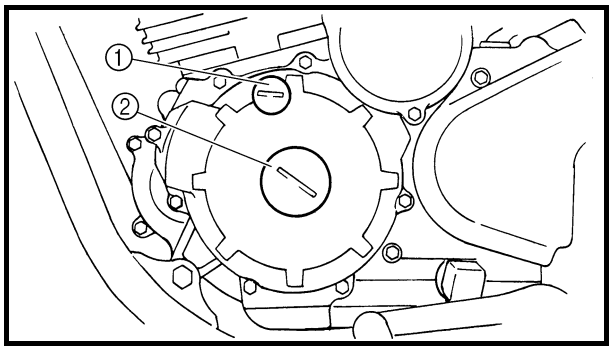
Valve clearance adjustment should be made with the engine cool, at room temperature.
When the valve clearance is to be measured or adjusted, the piston must be at Top Dead Center (T.D.C) on the compression stroke.



1.Remove:
- Air scoop (left and right) ①



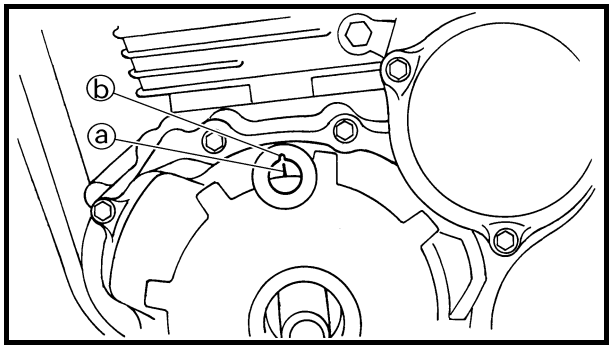
2.Remove:
- Spark plug
- Tappet cover (intake side) ①
- Tappet cover (exhaust side) ②



3.Remove:
- Timing mark accessing screw (with O-ring) ①
- Camshaft end cover (with O-ring) ②

4.Measure:
- Valve clearance
  Out of specification → Adjust.

Valve clearance (cold):
Intake valve 0.05 ~ 0.10 mm
Exhaust valve 0.10 ~ 0.15 mm



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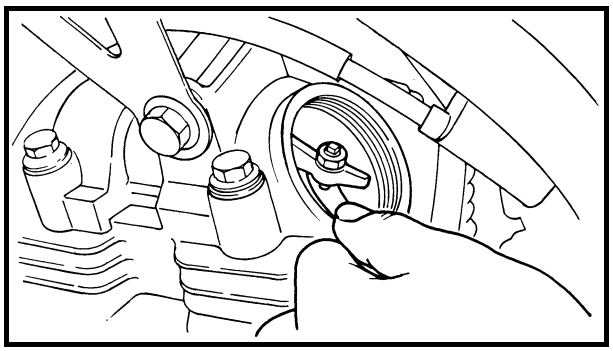
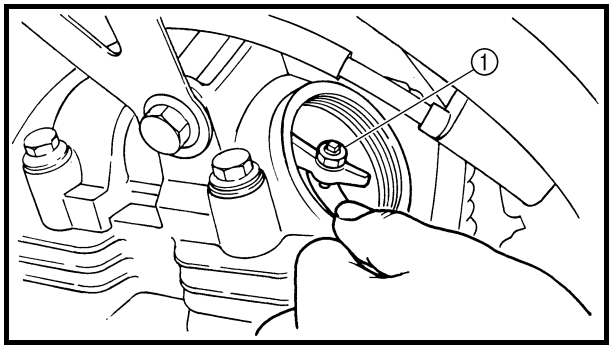
Measurement steps:

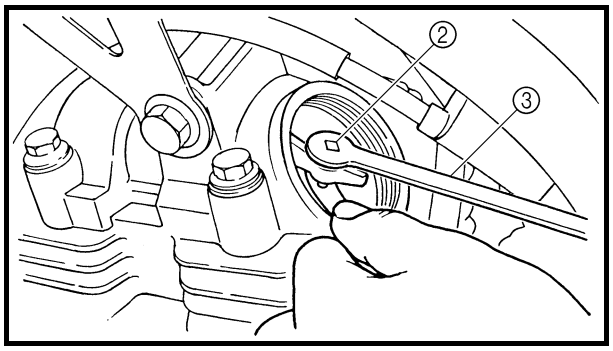
- Rotate the crankshaft counterclockwise to align the slit ⓐ on the rotor with the slit ⓑ on the crankcase cover when the piston is Top Dead Center (TDC).



● Measure the valve clearance by using a feeler gauge.
Out of specification → Adjust clearance.

****





5.Adjust:
• Valve clearance

****

Adjustment steps:
● Loosen the locknut ①.
● Turn the adjuster ② in or out with the tappet adjusting tool ③ until specified clearance is obtained.

Turning in	**Valve clearance is decreased.**
Turning out	**Valve clearance is increased.**

Tappet adjusting tool:
90890-01311

● Hold the adjuster to prevent it from moving and tighten the locknut.

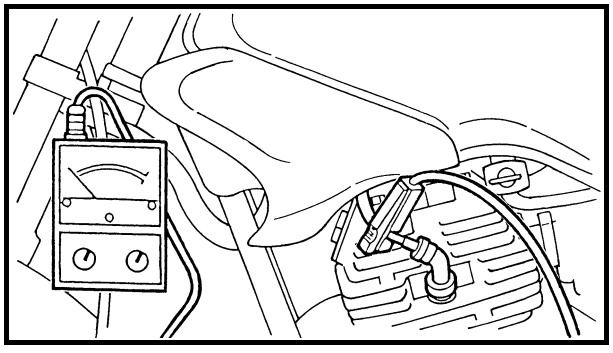
14 Nm (1.4 m • kg)

● Measure the vale clearance.
● If the clearance is incorrect, repeat above steps until specified clearance is obtained.

****

6.Install:
• O-ring
• Tappet cover (intake side)

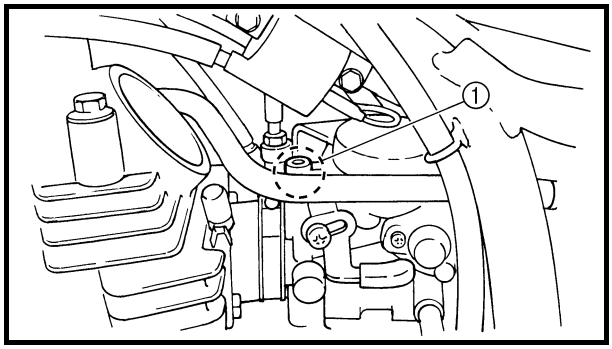
18 Nm (1.8 m • kg)

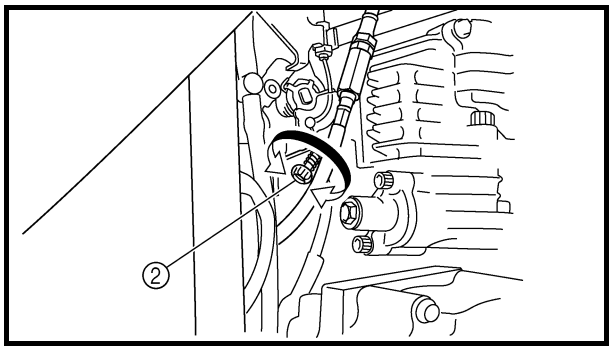


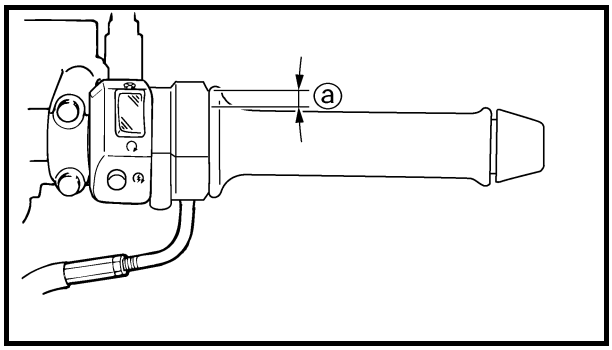
IDLING SPEED ADJUSTMENT

1.Start the engine and let it warm up for several minutes.
2.Attach:
• Engine tachometer to the spark plug lead.

Engine tachometer:
90890-03113







3.Check:
- Engine idling speed
  Out of specification → Adjust.

Engine idling speed:
1,350 ~ 1,450 r/min.

4.Adjust:
- Engine idle speed

****

Adjustment steps:
- Turn the pilot screw ① until it is lightly seated.
- Turn the pilot screw out by the specified number of turns.

Pilot screw:
3 turns out

- Turn the throttle stop screw ② in or out until the specified idling speed is obtained.

Turning in	**Idling speed is increased.**
Turning out	**Idling speed is decreased.**

****

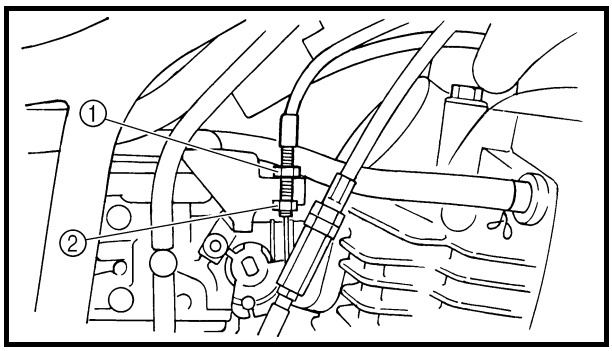
5.Adjust:
- Throttle cable free play
  Refer to the "THROTTLE CABLE ADJUSTMENT" section.

THROTTLE CABLE ADJUSTMENT

NOTE:
Prior to adjusting the throttle cable free play, the engine idling speed should be adjusted.

1.Check:
- Throttle cable free play ⓐ
  Out of specification → Adjust.

Free play (throttle cable):
3 ~ 5 mm at throttle grip flange



2.Adjust:
- Throttle cable free play

****

Adjustment steps:

Carburetor side

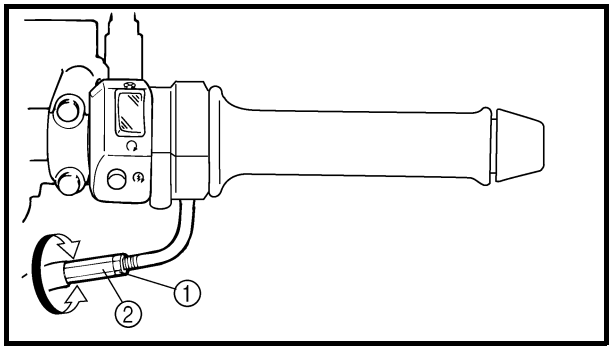
- Loosen the locknut ①.
- Turn the adjusting nut ② in or out until the specified throttle cable free play is obtained.

Turn in	**Throttle cable free play is increased.**
Turn out	**Throttle cable free play is decreased.**

- Tighten the locknut.

NOTE:

If the specified throttle cable free play cannot be obtained on the carburetor side of the cable, use the adjusting nut on the handlebar side.



Handlebar side

- Loosen the locknut ①.
- Turn the adjusting nut ② in or out until the specified throttle cable free play is obtained.

Turn in	**Throttle cable free play is increased.**
Turn out	**Throttle cable free play is decreased.**

- Tighten the locknut.

⚠ WARNING

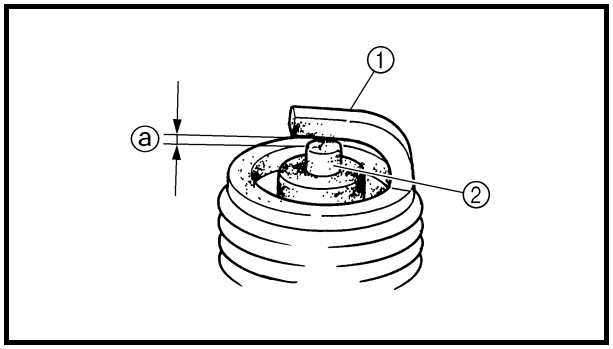
After adjusting the throttle cable free play, start the engine and turn the handlebar to the right or left to ensure that this does not cause the engine idling speed to change.

****

EB303040
SPARK PLUG INSPECTION

1.Check:
- Spark plug type
  Incorrect → Replace.

Standard spark plug:
D8EA (NGK),
X24ES-U (DENSO)



2.Inspect:
- Electrode ①
  Wear/damage → Replace.
- Insulator ②
  Abnormal color → Replace.
  Normal color is a medium-to-light tan color.

3.Clean:
- Spark plug
  (with spark plug cleaner or wire brush)

4.Measure:
- Spark plug gap ⓐ
  (with a wire gauge)
  Out of specification → Adjust gap.

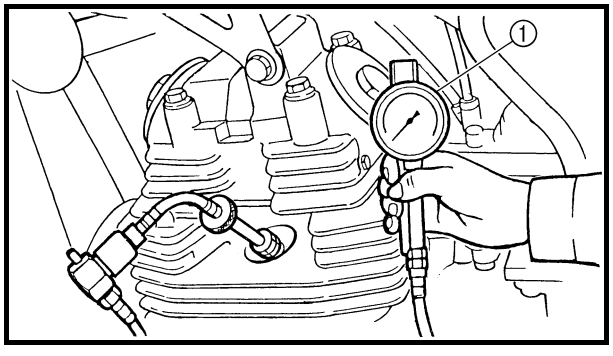
Spark plug gap:
0.6 ~ 0.7 mm

COMPRESSION PRESSURE MEASUREMENT

NOTE:
Insufficient compression pressure will result in performance loss.

1.Start the engine and let it warm up for several minutes.
2.Turn off the engine.
3.Remove:
- Spark plug

4.Attach:
- Compression gauge ①



Compression gauge:
90890-03081

5.Measure:
- Compression pressure
  If it exceeds the maximum pressure allowed → Inspect the cylinder head, valve surfaces and piston crown for carbon deposits.
  If it is below the minimum pressure → Squirt a few drops of oil into the affected cylinder and measure again.
  Follow the table below.

Compression pressure (With oil applied into cylinder)	
Reading	**Diagnosis**
Higher than without oil	**Worn or damaged pistons**
Same as without oil	**Possible defective ring(s), valves, cylinder head gasket or piston → Repair.**

Compression pressure (at sea level):
Standard:
1,200 kPa (12.0 Kg/cm^2, 12.0 bar)
Minimum:
1,050 kPa (10.5 Kg/cm^2, 10.5 bar)

****

Measurement steps:
- Crank the engine with the throttle wide-open until the reading on the compression gauge stabilizes.

⚠ WARNING

Before cranking the engine, ground all spark plug leads to prevent sparking.

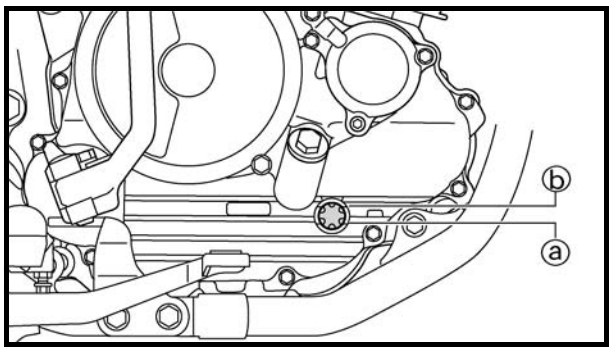
****

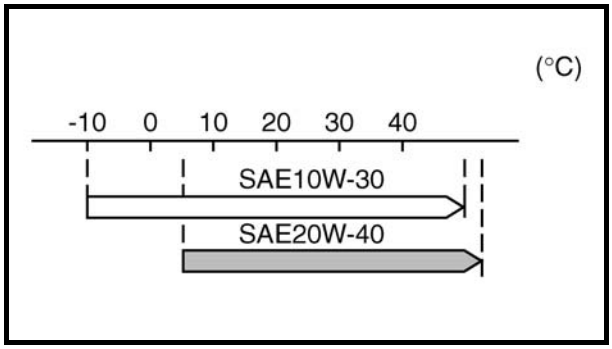
ENGINE OIL LEVEL INSPECTION

1.Stand the motorcycle on a level surface.

NOTE:
Place the motorcycle on a suitable stand.

2.Start the engine, warm it up for several minutes, and then turn it off.



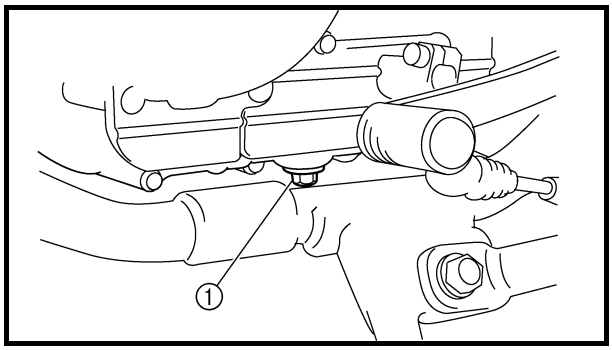


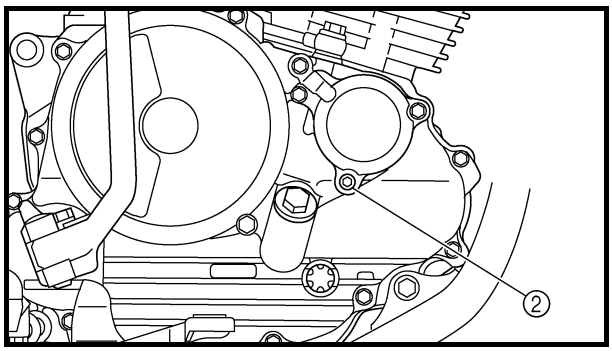
3.Check:
- Engine oil level
  The engine oil level should be between the minimum level mark ⓐ and maximum level mark ⓑ.
  Below the minimum level mark → Add the recommended engine oil to the proper level.

Recommended oil:
Refer to the chart for the engine oil grade
API standard
SE or higher grade

CAUTION:
Do not allow foreign materials to enter the crankcase.

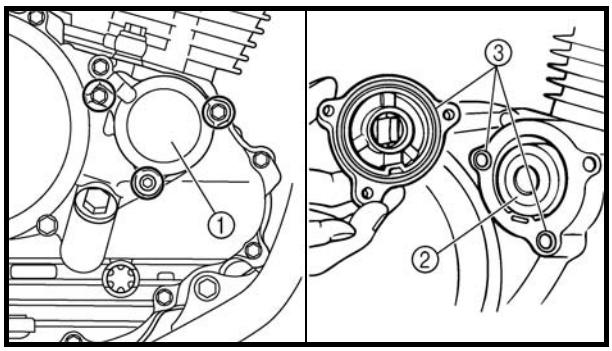
NOTE:
Before checking the engine oil level, wait a few minutes until the oil has settled.

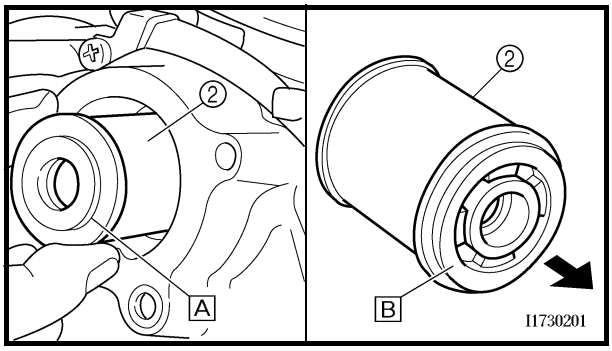




ENGINE OIL REPLACEMENT
1.Start the engine, warm it up for several minutes, and then turn it off.
2.Place a container under the engine oil drain bolt.
3.Remove:
- Engine oil filler bolt
- Engine oil drain bolt ①
  (along with the gasket)
- Oil filter element drain bolt ②
  (along with the gasket)

4.Drain:
- Engine oil
  (completely from the crankcase)





5.If the oil filter element is also to be replaced, perform the following procedure.

****

Replacement steps:

- Remove the oil filter element cover ① and oil filter element ②.
- Check the O-rings ③ and replace them if they are cracked or damaged.
- Install the new oil filter element and the oil filter element cover.

	Oil filter element cover bolt: 10 Nm (1.0 m • kg)

A Outside
B Inside

****

6.Check:

- Engine oil drain bolt gasket
- Oil filter element drain bolt gasket

Damage → Replace.

7.Install:

- Engine oil drain bolt (along with the gasket)

20 Nm (2.0 m • kg)

- Oil filter element drain bolt (along with he gasket)

10 Nm (1.0 m • kg)

8.Fill:

- Crankcase (With the specified amount of the recommended engine oil)

Quantity:
Total amount:
1.4 L
Without oil filter element replacement:
1.2 L
With oil filter element replacement:
1.3 L

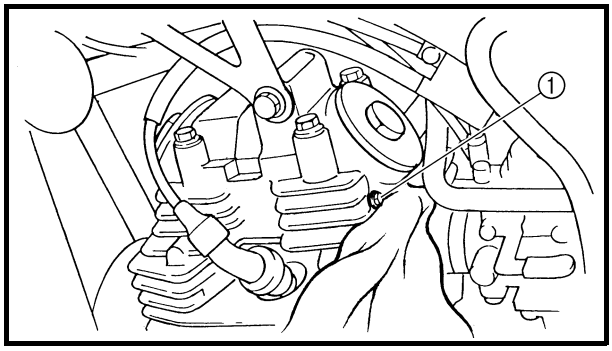
9.Install:

- Engine oil filler cap

10.Start the engine, warm it up for several minutes, and then turn it off.
11.Check:
- Engine
  (for engine oil leaks)

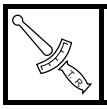
12.Check:
- Engine oil level
  Refer to the “ENGINE OIL LEVEL INSPECTION” section.

13.Check:
- Engine oil pressure



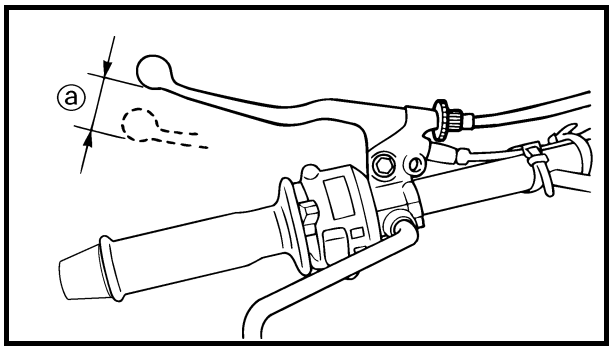
****

Checking steps:
- Slightly loosen the oil gallery bolt ①.
- Start the engine and keep it idling until engine oil starts to seep from the oil gallery bolt. If no engine oil comes out after one minute, turn the engine off so that it will not seize.
- Check the engine oil passages and the oil pump for damage or leakage. Refer to the “OIL PUMP” section in CHAPTER 4.
- Start the engine after solving the problem(s) and check the engine oil pressure again.
- Tighten the oil gallery bolt to specification.

	**Oil gallery bolt:** **7 Nm (0.7 m • kg)**

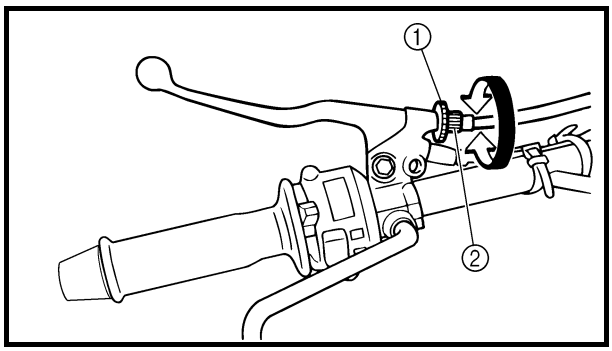
****

CLUTCH ADJUSTMENT



1.Check:
- Clutch cable free play ⓐ
  Out of specification → Adjust.

	Clutch cable free play (at the end of the clutch lever): **10 ~ 15 mm**



2.Adjust:
- Clutch cable free play

****

Adjustment steps:

Handlebar side

- Loosen the locknut ①.
- Turn the adjusting bolt ② in or out until the specified clutch cable free play is obtained.

Turn in	**Clutch cable free play is increased.**
Turn out	**Clutch cable free play is decreased.**

- Tighten the locknut.

NOTE:

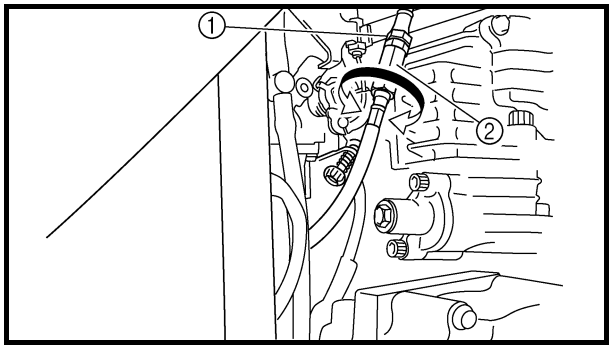
If the specified clutch cable free play cannot be obtained on the handlebar side of the cable, use the adjusting nut on the engine side.

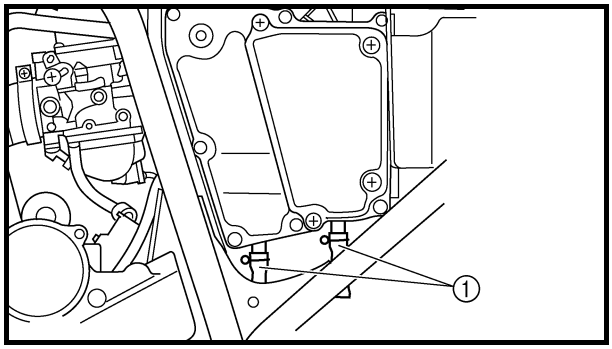
Engine side

- Loosen the locknuts ①.
- Turn the adjusting bolt ② in or out until the specified clutch cable free play is obtained.

Turn in	**Clutch cable free play is increased.**
Turn out	**Clutch cable free play is decreased.**

- Tighten the locknuts.





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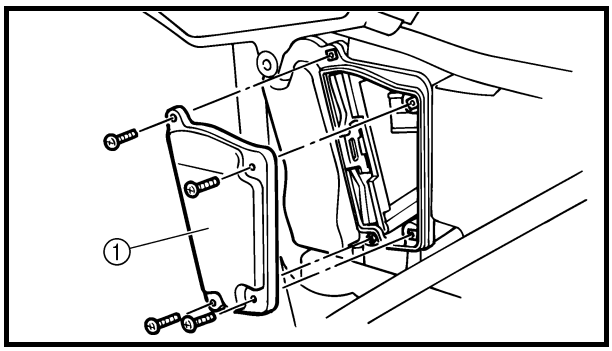
AIR FILTER CLEANING

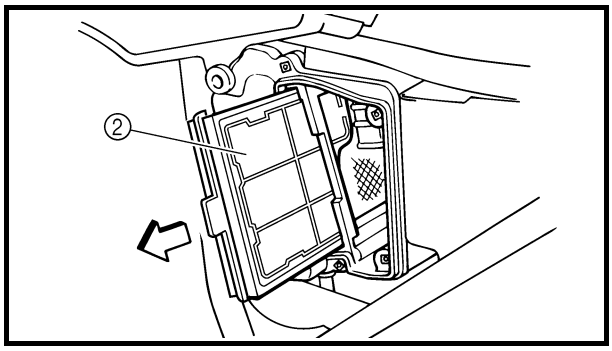
1.Check:
- Air filter check hoses ①

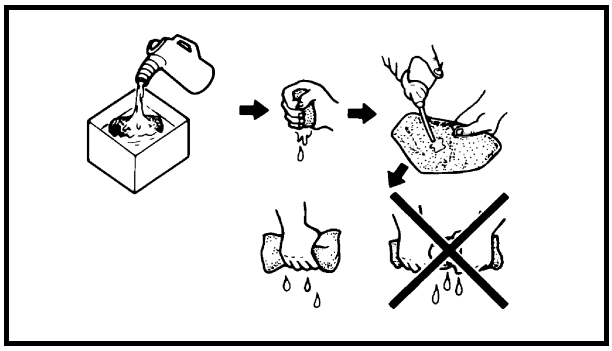
NOTE:

On the bottom of the air filter case is a check hoses ①. If dust or water or both collects in this hoses, clean the air filter element and air filter case.

2.Remove:
- Side cover (left)
  Refer to the “SIDE COVER” section.







3.Remove:
- Air filter case cover ①
- Air filter element ②

4.Clean:
- Air filter element
  (with solvent)

⚠ WARNING

Never use low flash point solvents, such as gasoline, to clean the air filter element. Such solvents may cause a fire or an explosion.

NOTE:

After cleaning, gently squeeze the air filter element to remove the excess solvent.

CAUTION:

Do not twist the air filter element when squeezing it.

5.Check:
- Air filter element
  Damage → Replace.

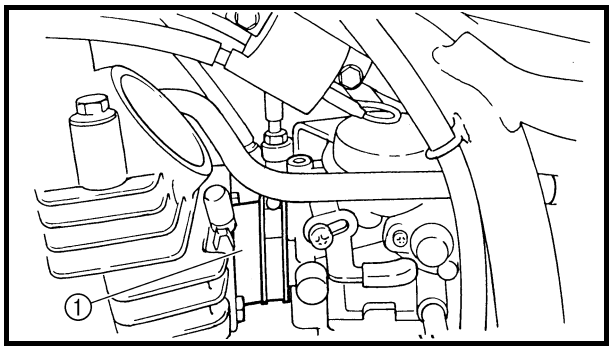
6.Apply the recommended oil to the entire surface of the air filter element and squeeze out the excess oil. The air filter element should be wet but not dripping.

Recommended oil:
Engine oil

7.Install:
- Air filter element
- Air filter case cover

CAUTION:

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.

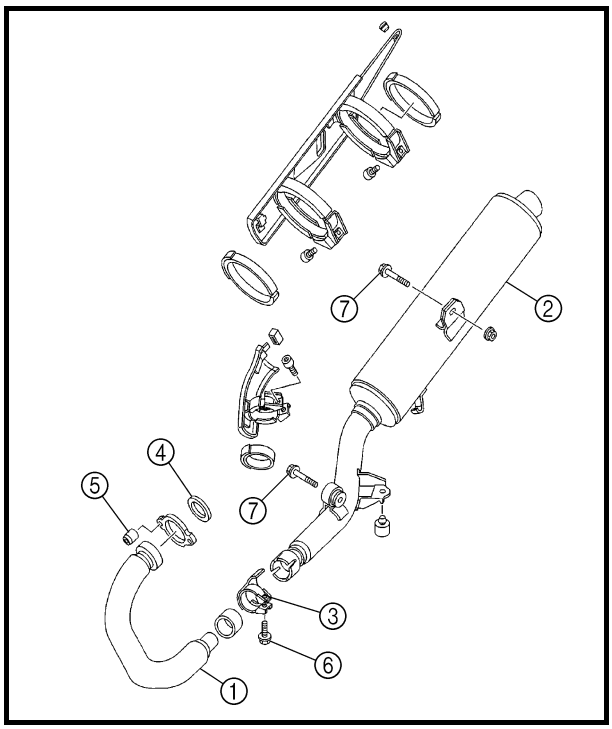


CARBURETOR JOINT INSPECTION

1.Inspect:
- Carburetor joint ①
  Cracks/Damage → Replace.

FUEL LINE INSPECTION

1.Inspect:
- Fuse hose
  Cracks/Damage → Replace.



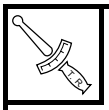
EXHAUST SYSTEM INSPECTION

1.Inspect:

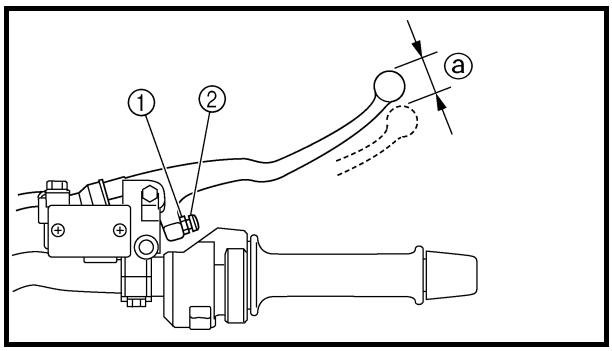
- Exhaust pipe ①
- Muffler ②
  Cracks/Damage/Leak → Repair or replace.
- Exhaust pipe Joint ③
- gasket ④
  Damage/Leak → Repair or replace.

2.Tighten:

- Muffler and exhaust pipe



Nuts (exhaust pipe joint) ⑤:
18 Nm (1.8 m • kg)
Bolt (exhaust pipe joint) ⑥:
20 Nm (2.0 m • kg)
Bolts (muffler) ⑦:
30 Nm (3.0 m • kg)



CHASSIS

FRONT BRAKE ADJUSTMENT

1.Check:

- Brake lever free play ⓐ
  Out of specification → Adjust.

	Free play (brake lever): **2 ~ 5 mm (at brake lever end)**

2.Adjust:

- Brake lever free play

****

Adjustment steps:

- Loosen the locknut ①.
- Turn the adjuster ② in or out until the specified free play is obtained.

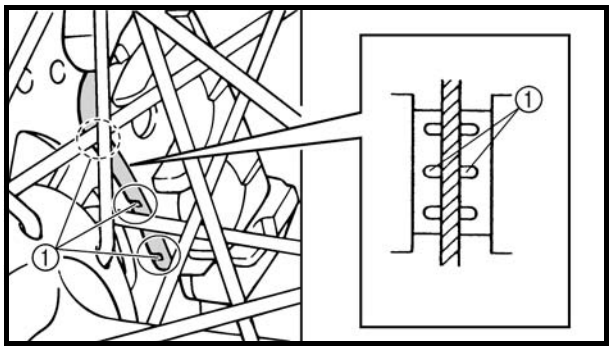
Turning in	**brake lever free play is decreased.**
Turning out	**brake lever free play is increased.**

- Tighten the locknut.

CAUTION:

After adjusting the front brake lever free play, make sure that there is no brake drag.

****

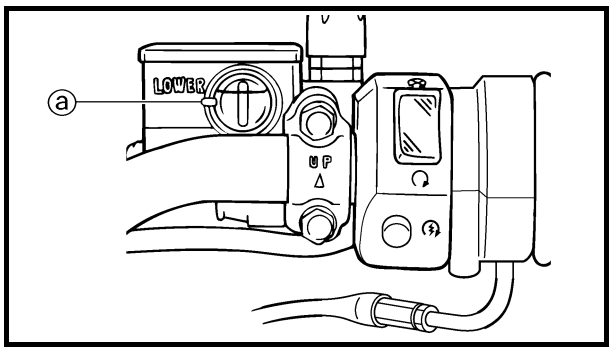


BRAKE PAD INSPECTION

1.Operate the brake lever.

2.Inspect:

- Brake pad
  Wear indicators ① almost touch the brake disc → Replace the brake pads as set.
  Refer to the “BRAKE PAD PEPLCEMENT” section in CHPTER 6.



BRAKE FLUID LEVEL INSPECTION

1.Stand the motorcycle on a level surface.

NOTE:
When inspecting the brake fluid level, make sure the motorcycle is upright.

2.Inspect:
- Brake fluid level
  Brake fluid level is below the "LOWER" level line ⓐ → Fill to proper level.

Recommended brake fluid:
DOT 3 or 4

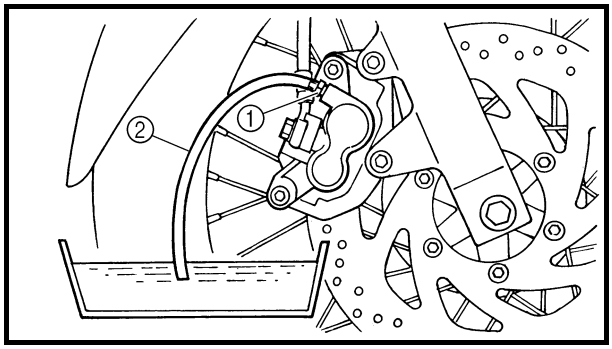
NOTE:
For a correct reading of the brake fluid level, make sure the top of the handlebar brake fluid reservoir is horizontal.

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

Bleed the brake system whenever:
- **The system is disassembled**
- **A brake hose is loosened or removed**
- **The brake fluid level is very low**
- **Brake operation is faulty**

If the brake system is not properly bled, a loss of braking performance may occur.



1.Bleed:
- Brake system

****

Air bleeding steps:

a. Fill the reservoir with the proper brake fluid.
b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
c. Connect a clear plastic hose ① tightly to the caliper bleed screw ②.
d. Place the other end of the hose into a container.
e. Slowly apply the brake lever several times.
f. Pull the lever in. Hold the lever in position.
g. Loosen the bleed screw and allow the lever to travel towards its limit.
h. Tighten the bleed screw when the lever limit has been reached, then release the lever.

i. Repeat steps (e) to (h) until all the air bubbles have disappeared from the bake fluid.

NOTE:
When bleeding the brake system, make sure that there is always enough brake fluid in the brake fluid reservoir, before applying the brake lever. Ignoring this precaution could allow air to enter the brake system, lengthening the bleeding procedure, considerably.

j. Tighten the bleed screw.

Bleed screw:
6 Nm (0.6 m • kg)

NOTE:
If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the brake system have disappeared.

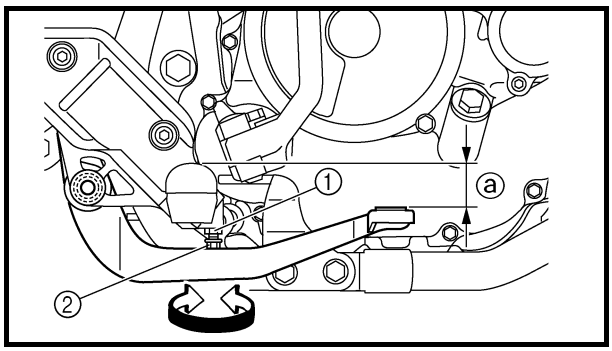
k. Fill the brake fluid reservoir to the proper level.
Refer to the "BRAKE FLUID LEVEL INSPECTION" section.

⚠ WARNING
After bleeding the brake system check the brake operation.

****

BRAKE HOSE INSPECTION

1. Inspect:
- Brake hose
  Cracks/wear/damage → Replace.
2. Check:
- Brake hose clamp(s)
  Loose → Tighten.
3. Hold the motorcycle upright and apply the front brake.
4. Check:
- Brake hose
  Activate the brake lever several times.
  Brake fluid leakage → Replace the faulty hose.
  Refer to the "FRONT BRAKE" section in CHAPTER 6.



REAR BRAKE ADJUSTMENT

1.Check:

- Brake pedal position
  (distance ⓐ from the top of the rider footrest to the top of the brake pedal)
  Out of specification → Adjust.

Brake pedal position (below the top of the rider footrest):
30 mm

2.Adjust:

- Brake pedal position

****

Adjustment steps:

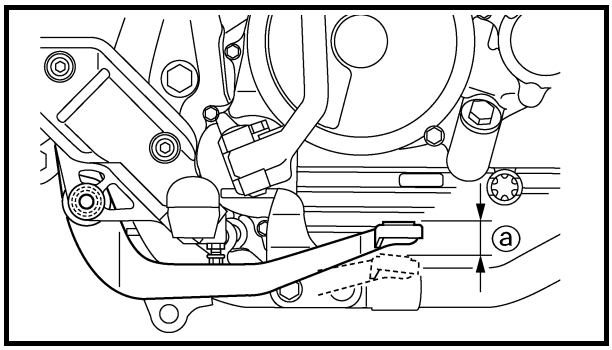
- Loosen the locknut ①.
- Turn the adjusting bolt ② in or out until the specified brake pedal position is obtained.

Turn in	**Brake pedal is raised.**
Turn out	**Brake pedal is lowered.**

- Tighten the locknut to specification.

Locknut:
10 Nm (1.0 m • kg)

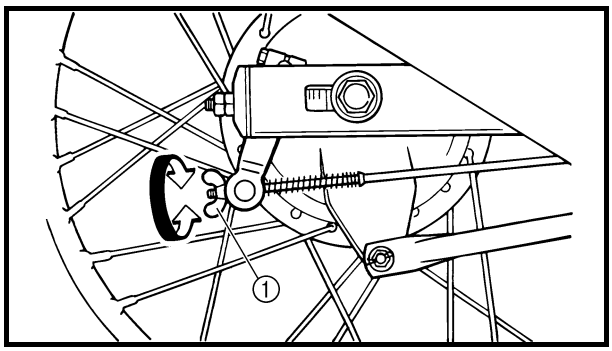
****



3.Check:

- Brake pedal free play ⓐ
  Out of specification → Adjust.

Free play:
20 ~ 30 mm



4.Adjust:
- Brake pedal free play

****

Adjustment steps:

- Turn the adjuster ① in or out until the specified free play is obtained.

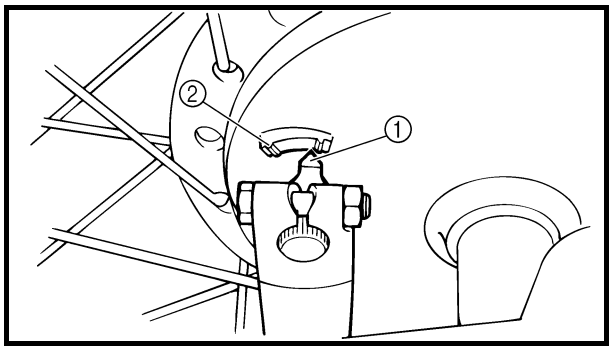
Turning in	**Free play is decreased.**
Turning out	**Free play is increased.**

CAUTION:

Make sure that the brake does not drag after adjusting it.

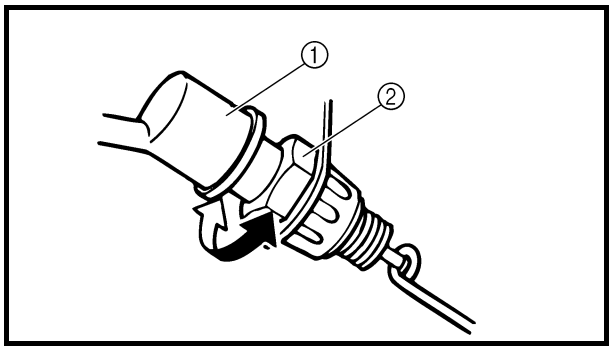
****

5.Adjust:
- Brake light switch
  Refer to the "BRAKE LIGHT SWITCH ADJUSTMENT" section.



BRAKE SHOE INSPECTION

1.Operate the brake pedal.
2.Inspect:
- Brake shoes
  Wear indicator ① reaches the wear limit line ② → Replace the brake shoes as a set.
  Refer to the "REAR WHEEL AND REAR BRAKE" section in CHAPTER 6.



BRAKE LIGHT SWITCH ADJUSTMENT

1.Check:
- Brake light operation timing
  Incorrect → Adjust.

2.Adjust:
- Brake light operation timing

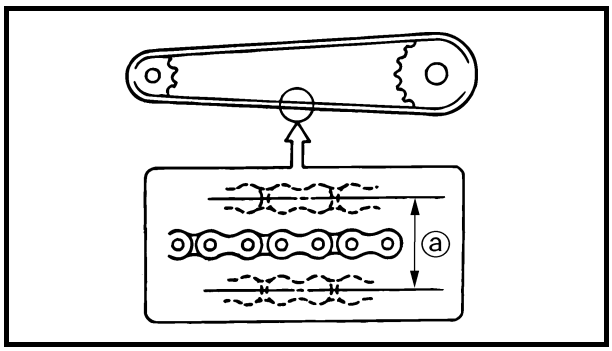
****

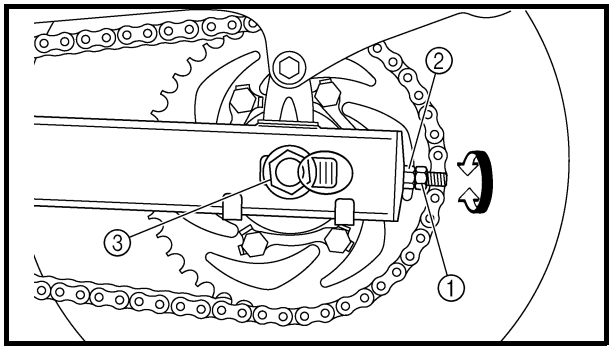
Adjustment steps:

- Hold the main body ① of the switch with your hand so that it does not rotate, and turn the adjuster ② in or out until the proper operation timing is obtained.

Turning in	**Brake light comes on first.**
Turning out	**Brake light comes on slow.**

****





DRIVE CHAIN SLACK ADJUSTMENT

⚠ WARNING

- **Securely support the motorcycle so that there is no danger of it falling over.**
- **Stand the motorcycle on its centerstand.**

1.Check:
- Drive chain slack ⓐ
  Out of specification → Adjust.

Drive chain slack:
20 ~ 30 mm

2.Adjust:
- Drive chain slack

****

Adjustment steps:
- Loosen the each locknuts ① and chain adjuster nuts ②.
- Loosen the axle nut ③.
- Turn the chain adjustment nuts ② clockwise or counterclockwise until the specified drive chain slack is obtained.

Turning in	**Drive chain slack is decreased.**
Turning out	**Drive chain slack is increased.**

NOTE:
- Turn each chain adjuster nuts exactly the same amount to maintain correct axle alignment. (There are marks a on each chain adjuster nuts. Use them when adjusting the slack for proper alignment.)
- Before tightening the axle nut and locknuts to specification, make sure that there is no clearance at the adjuster nuts (or the swingarm end) on both sides by pushing the wheel forward.

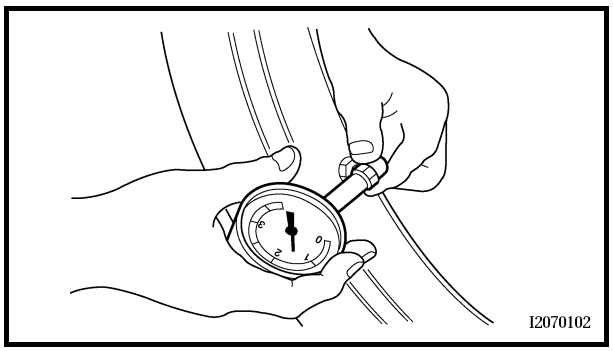
- Tighten the axle nut.

85 Nm (8.5 m • kg)

- Tighten the locknut.

7 Nm (0.7 m • kg)

****



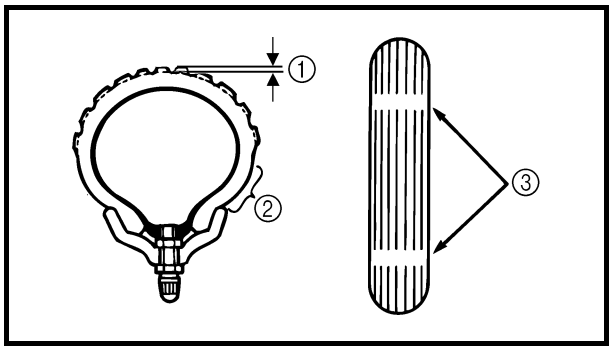
TIRE INSPECTION

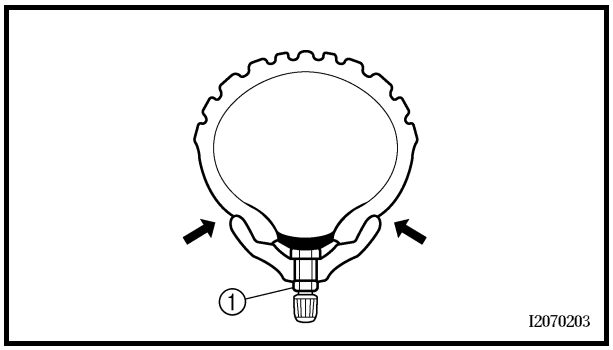
1.Measure:

- Tire inflation pressure
  Out of specification → Adjust.

Basic weight (with oil and full fuel tank)	131 kg	
Maximum load*	180 kg	
Cold tire pressure	Front	Rear
Up to 100 kg load*	200 kPa (2.0 kg/cm²)	200 kPa (2.0 kg/cm²)
100 kg ~ maximum. Load*	200 kPa (2.0 kg/cm²)	225 kPa (2.25 kg/cm²)

* Load is the total weight of the cargo, rider, passenger and accessories.





2.Inspect:

- Tire surfaces
  Wear/Damage → Replace.

Minimum tire tread depth (front and rear):
0.8 mm

① Tread depth
② Side wall
③ Wear indicator

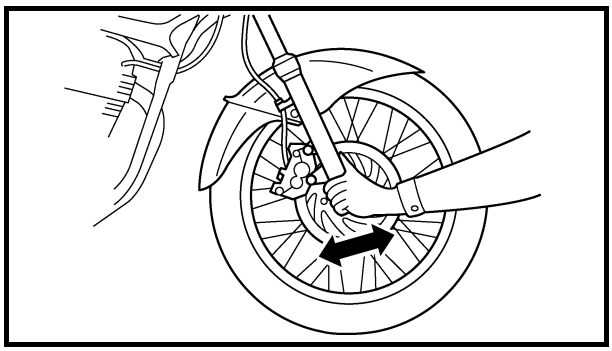
3.After a tire repair or replacement, be sure to tighten the valve stem locknut ① to specification.

STEERING HEAD INSPECTION

1.Stand the motorcycle on a level surface.

NOTE:
Stand the motorcycle on its centerstand.

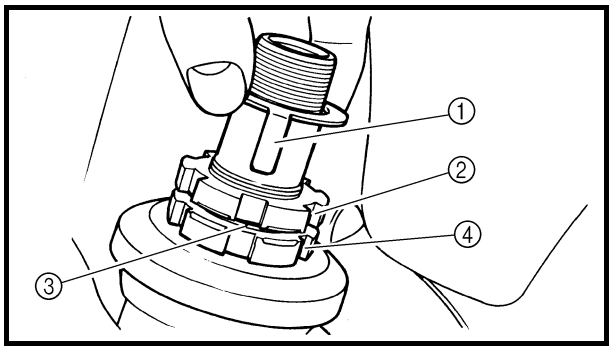
2.Elevate the front wheel by placing a suitable stand under the engine.

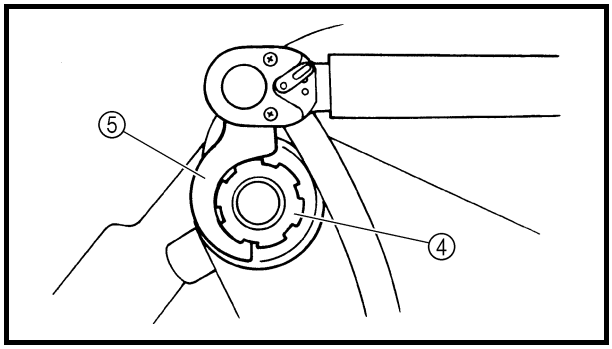


3.Check:
- Handlebar assembly
  Grasp the handlebar and gently rock the steering.
  Looseness → Adjust the handlebar.
- Steering assembly bearings
  Grasp the bottom of the lower front fork tubes and gently rock the fork assembly.
  Looseness → Adjust the steering head.

4.Adjust:
- Steering head

5.Remove:
- Handlebar
- Pinch bolt
- Steering stem nut
- Handle crown





6.Adjust:
- Steering head

****

Adjustment steps:
- Remove the lock washer ①, the upper ring nut ②, and the rubber washer ③.
- Loosen the lower ring nut ④ and then tighten it to specification with a ring nut wrench ⑤.

NOTE:
Set the torque wrench at a right angle to the ring nut wrench.

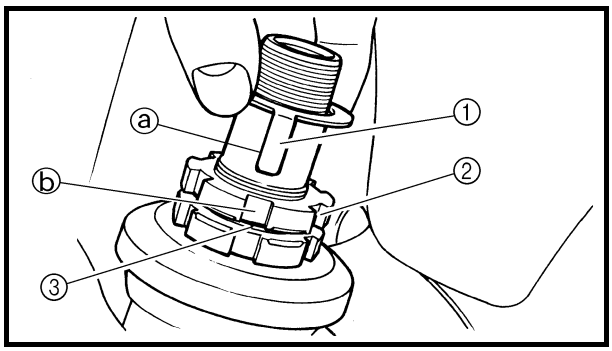
	Steering nut wrench: **90890-01403**

	Lower ring nut (initial tightening torque): **48 Nm (4.8 m • kg)**

- Loosen the lower ring nut ④ completely, then tighten it to specification.

⚠ WARNING
Do not overtighten the lower ring nut.

	Lower ring nut (final tightening torque): **18 Nm (1.8 • kg)**

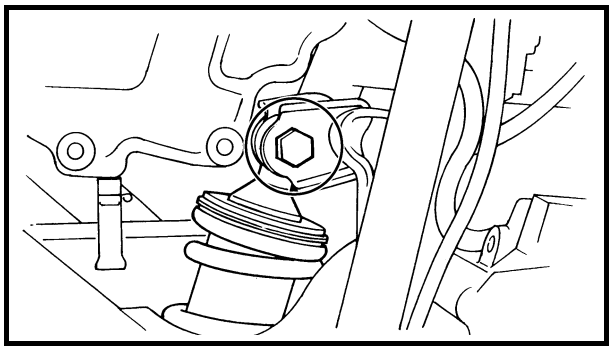


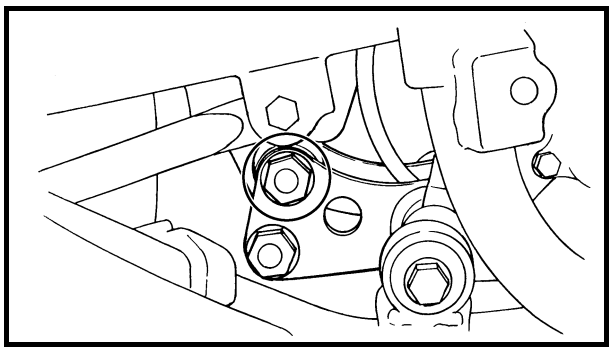
- Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and inspect the upper and lower bearings.
  Refer to the “STEERING HEAD AND HANDLEBAR” in section CHAPTER 6.
- Install the rubber washer ③.
- Install the upper ring nut ②.
- Finger tighten the upper ring nut ②, then align the slots of both ring nuts. If necessary, hold the lower ring nut and tighten the upper ring nut until their slots are aligned.
- Install the lock washer ①.

NOTE:
Make sure that the lock washer tabs ⓐ sit correctly in the ring nut slots ⓑ.

****

7.Install:
- Handle crown
- Steering stem nut — **110 Nm (11.0 m • kg)**
- Pinch bolt — **23 Nm (2.3 m • kg)**





REAR SHOCK ABSORBER INSPECTION

1.Remove:
- Seat
- Side cover (right)
  Refer to the “SIDE COVER” section.
- Fuel tank
  Refer to the “FUEL TANK” section.

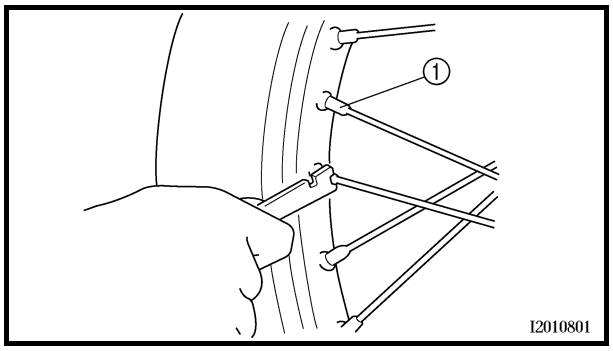
2.Check:
- Rear shock absorber mount
  Looseness → Tighten.
  Bolt (upper) ① — **59 Nm (5.9 m • kg)**
  Nut (lower) ② — **59 Nm (5.9 m • kg)**
  Refer to the “REAR SHOCK ABSORBER AND SWINGARM” section in CHAPTER 6.

WHEEL INSPECTION

1.Inspect:
- Wheels
  Damage/Bends → Replace.

NOTE:
Always balance the wheel when a tire or wheel has been changed or replaced.

⚠ WARNING
- **Never attempt even small repairs to the wheel.**
- **Ride conservatively after installing a tire to allow it to seat itself properly on the rim.**



SPOKE INSPECTION AND TIGHTENING

1.Inspect:
- Spokes ①
  Bend/Damage → Replace.
  Loose spoke → Retighten.

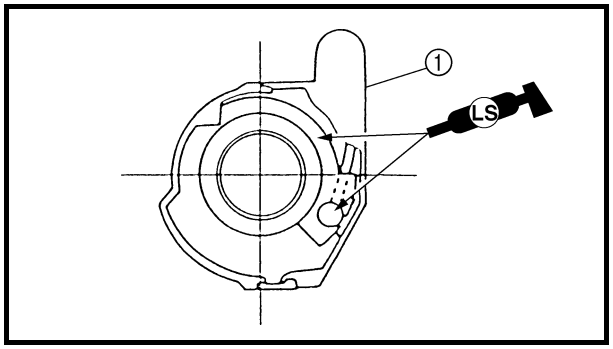
2.Tighten:
- Spokes

	Nipple: 0.6 m • kg

CABLE INSPECTION

⚠ WARNING
Damage cable sheath may cause corrosion and interfere with the cable movement. An unsafe condition may result so replace such cable as soon as possible.

1.Inspect:
- Cable sheath
- Cables (throttle, clutch and starter)
  Damage → Replace.



LUBRICATION

Cables

1.Check:

- Cable operation
  Unsmooth operation → Lubricate.

	Recommended lubricant: Engine oil

NOTE:

Hold cable end high and apply several drops of lubricant to cable.

2.Apply the grease to the throttle cable end and cable guide groove at inside of throttle housing ①.

	Lithium soap base grease

Level/pedal

1.Lubricate the pivoting parts of the each lever and pedal.

	Recommended lubricant: Engine oil

Sidestand/centerstand

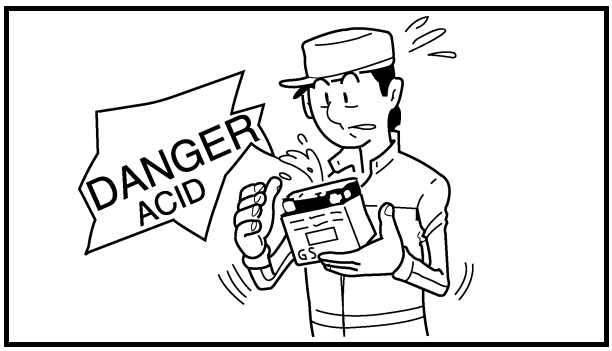
1.Lubricate the pivoting parts.

	Recommended lubricant: Engine oil

Rear suspension

1.Lubricate the pivoting parts.

	Recommended lubricant: Lithium-soap base grease

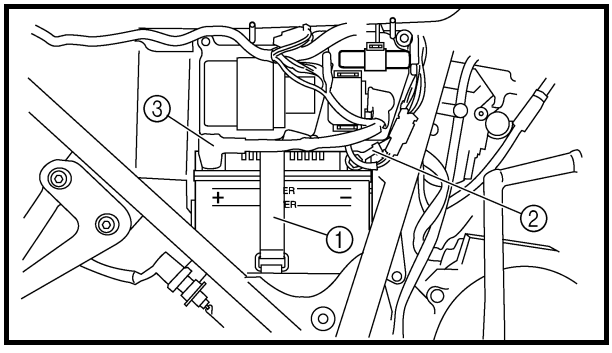


ELECTRICAL

BATTERY INSPECTION

⚠ WARNING

Battery electrolyte is dangerous. It contains sulfuric acid which is poisonous and highly caustic.
Always follow these preventive measures:
- **Avoid bodily contact with electrolyte as it can cause severe burns and permanent eye injury.**
- **Wear protective eye gear when handling or working near batteries.**
- **Antidote (EXTERNAL):**
- **SKIN - Flush with water.**
- **EYES - Flush with water for 15 minutes and get immediate medical attention.**
- **Antidote (INTERNAL):**
- **Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.**
- **Batteries generate explosive hydrogen gas.**
- **Always follow these preventive measures:**
- **Change batteries in a well - ventilated area.**
- **Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes, etc.)**
- **DO NOT SMOKE when charging or handling batteries.**
- **KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**



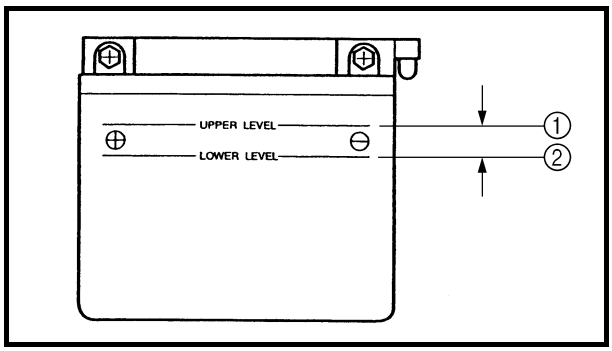
1.Remove:
- Side cover (right)
  Refer to the “SIDE COVER” section.
- battery band ①

2.Disconnect:
- battery leads
  (from the battery terminals)

CAUTION:

First, disconnect the negative lead ②, then the positive lead ③.

3.Remove:
- battery



4.Inspect:
- Electrolyte level
  Electrolyte level should be between the upper ① and lower ② level marks. Electrolyte level is too low → Add electrolyte to proper level.

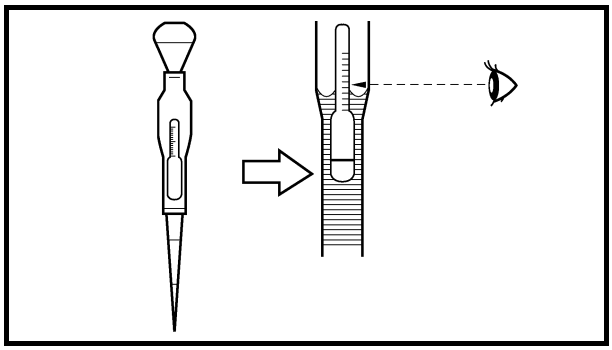
CAUTION:

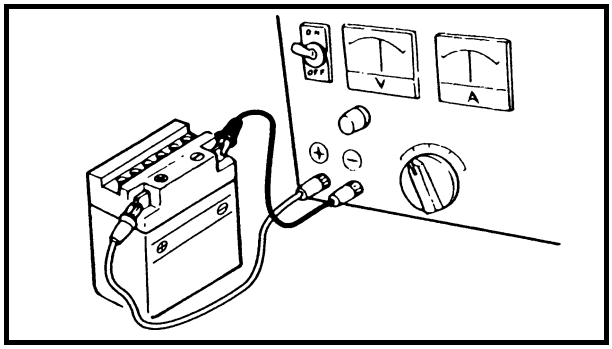
Refill with distilled water only. Tap water contains minerals which are harmful to a battery.

5.Inspect:
- Breather hose
  Obstruction → Remove.
  Damage → Replace.

CAUTION:

When inspecting the battery, make sure that the breather hose is routed correctly. If the breather hose is positioned in such a way as to allow battery electrolyte or gas to come into contact with the frame, this could damage the motorcycle and ruin its finish.





6.Check:
- Specific gravity
  Less than 1.280 → Recharge the battery.

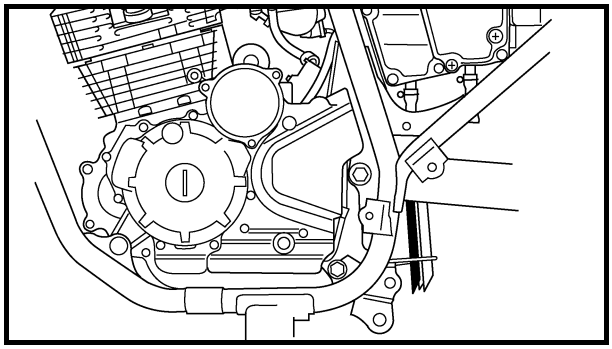
Charging Current:
0.7 amps/10 hr
Specific Gravity:
1.280 at 20 °C

****

Replace the battery if:
- Battery voltage will not rise to a specific value or bubbles fail to rise during charging.
- Sulphation of one or more cells occurs, (as indicated by the plates turning white, or material accumulating in the bottom of the cell).

- Specific gravity readings after a long, slow charge indicate that one cell is charged lower than the rest.
- Warpage or buckling of plates or insulators is evident.

****



7.Connect:
- Breather hose (battery)
  Be sure the hose is properly attached and routed.

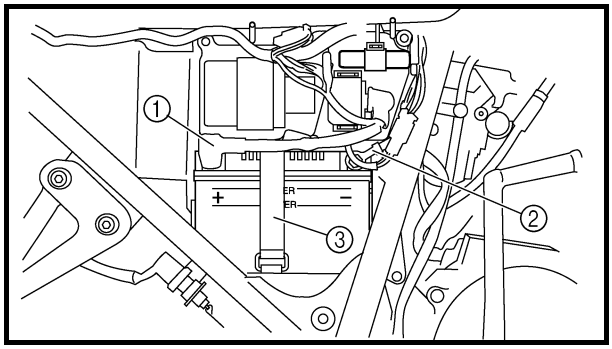
CAUTION:

When inspecting the battery, be sure the breather pipe is routed correctly. If the breather pipe touches the frame or exits in such a way as to cause battery electrolyte or gas to exit onto the frame, structural and cosmetic damage to the motorcycle can occur.

8.Inspect:
- Battery terminals
  Dirty → Clean with a wire brush.
  Poor connection → Correct.

NOTE:

After cleaning the terminals, apply a light coat of grease.



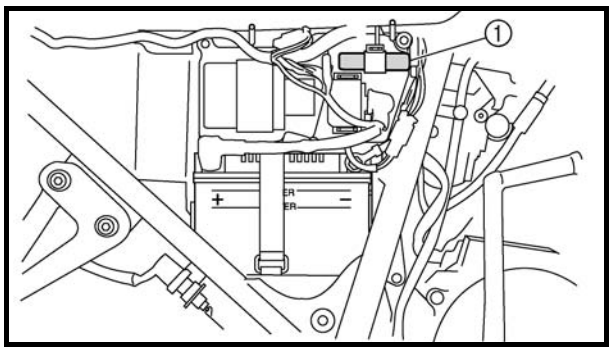
9.Install:
- Battery

10.Connect:
- Battery leads

CAUTION:

First, connect the positive lead ①, then connect the negative lead ②.

11.Install:
- Battery band ③
- Side cover (right)
  Refer to the “SIDE COVER” section.



FUSE INSPECTION

1.Remove:
- Side cover (right)
  Refer to the “SIDE COVER” section.

2.Remove:
- Fuse ①

3.Inspect:
- Fuse
  Defective → Replace.
  Blown fuse (new) → Inspect circuit.

NOTE:
Install new fuse of proper amperage.

Amperage: 10 A

4.Replace:
- Blown fuse

****

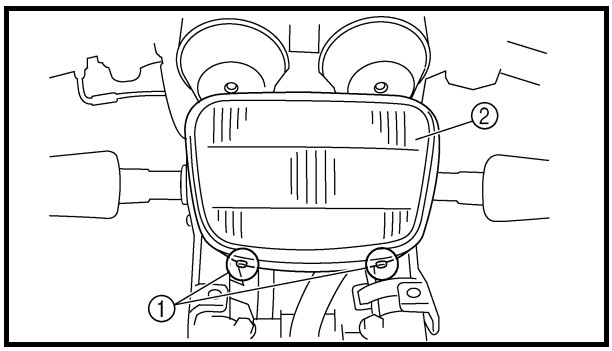
Blown fuse replacement steps:
- Turn off ignition and the circuit.
- Install a new fuse of proper amperage.
- Turn on switches to verify operation of electrical device.
- If fuse blows immediately again check circuit in question.

****

⚠ WARNING

Do not use fuse of higher amperage rating than recommended. Extensive electrical system damage and fire could result from substitution of a fuse of improper amperage.

5.Install:
- Fuse



HEADLIGHT BEAM ADJUSTMENT

1.Remove:
- Holding screw ①
- Headlight unit ②

2.Adjust:
- Headlight beam (vertical)

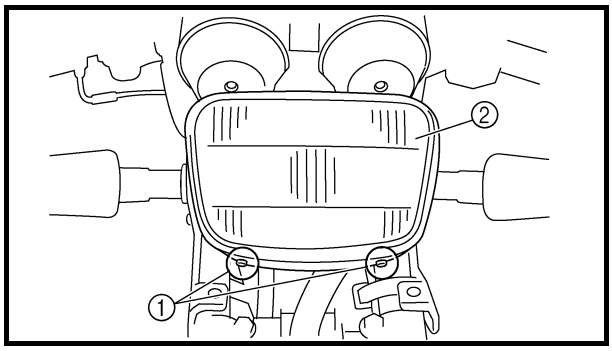
****

Headlight beam adjustment steps:

- Loosen the bolt (headlight body).
- Position the headlight body up or down to adjust the headlight beam.

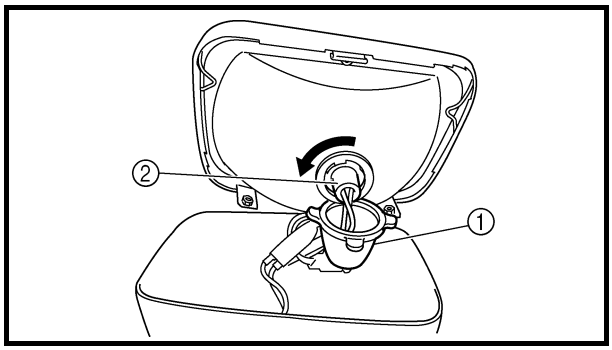
****

3.Install:
- Headlight unit



HEADLIGHT BULB REPLACEMENT

1.Remove:
- Holding screw ①
- Headlight unit ②



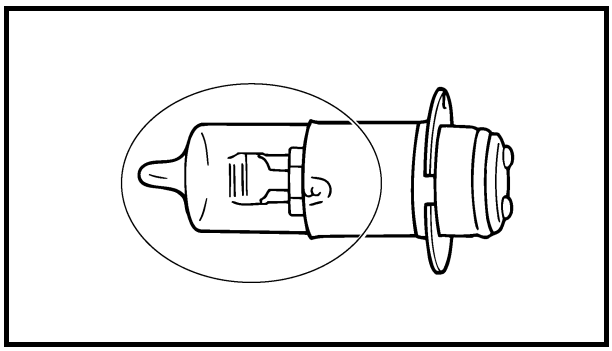
2.Remove:
- Cover ①
- Bulb (defective)

NOTE:

Turn the bulb holder ② counterclockwise to remove the bulb.

⚠ WARNING

Keep flammable products and your hands away from the bulb while it is on, it will be hot. Do not touch the bulb until it cools down.



3.Install:
- Bulb (new)
  Secure the new bulb with the bulb holder.

CAUTION:

Avoid touching glass part of bulb. Also keep it free from oil otherwise, transparency of glass, bulb life and illuminous flux will be adversely affected. If oil gets on bulb, clean it with a cloth moistened thoroughly with alcohol or lacquer thinner.

4.Install:
- Cover
- Headlight unit

CHAPTER 4.
ENGINE OVERHAUL

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ENGINE OVERHAUL

ENGINE REMOVAL

NOTE:
It is not necessary to remove the engine in order to remove the following components.
- Cylinder head
- Cylinder
- Piston
- Clutch
- Kickstarter shaft and shift shaft
- Oil pump
- Generator

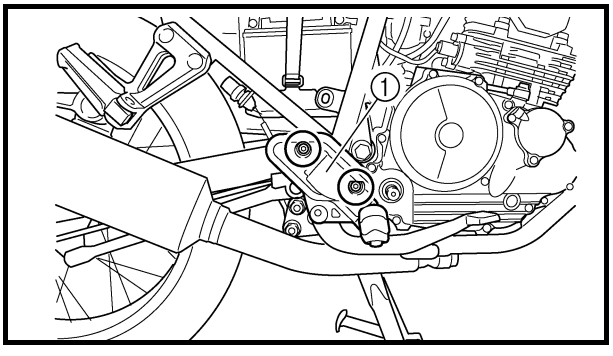
1.Remove:
- Seat
- Fuel tank

  Refer to the “SEAT, FUEL TANK” section in CHAPTER 3.

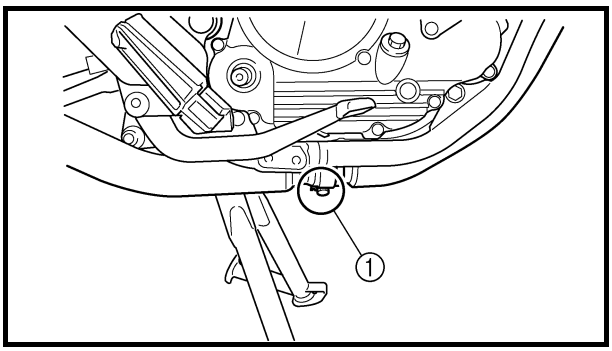
⚠ WARNING
Securely support the motorcycle so there is no danger of it falling over.

ENGINE OIL
1.Remove:
- Drain plug

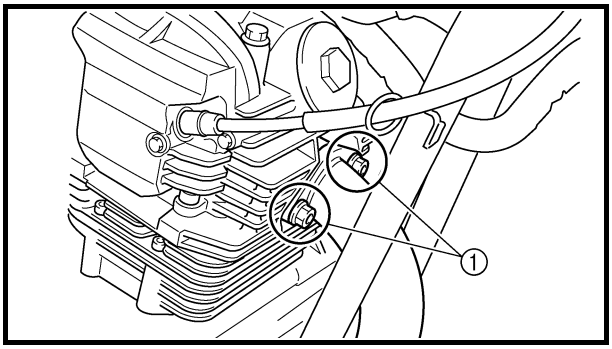
  Refer to the “ENGINE OIL REPLACEMENT” section in CHAPTER 3.



EXHAUST PIPE ASSEMBLY
1.Remove:
- Bolts (right footrest bracket)
- Right footrest bracket ①

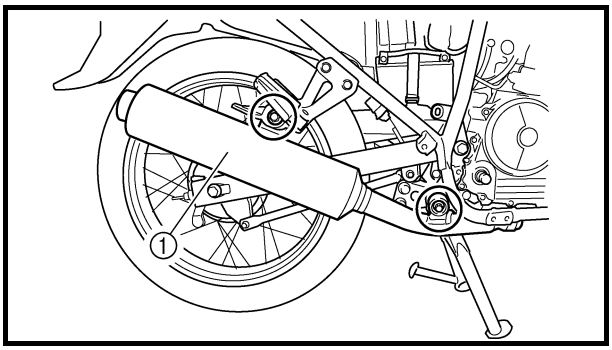


2.Loosen:
- Bolt ① (exhaust pipe joint)

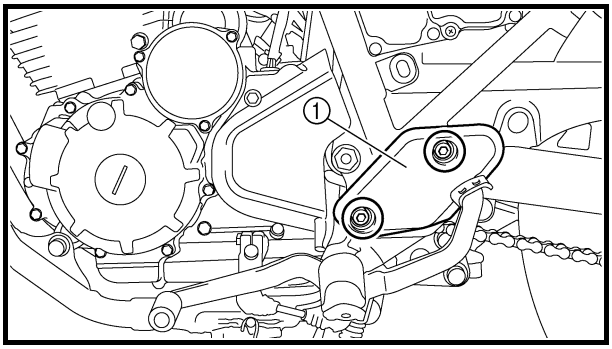


3.Remove:
- Nuts ① (exhaust pipe)

4.Remove:
- Exhaust pipe assembly



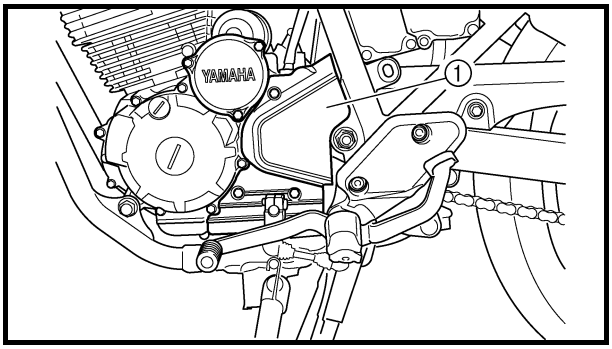
5.Remove:
- Bolts (muffler)
- Nut (muffler)
- Muffler ①



LEFT FOOTREST BRACKET

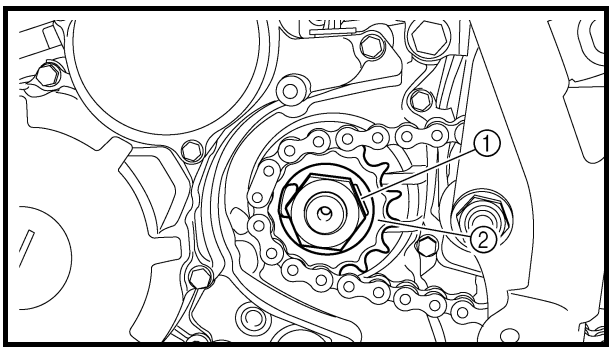
1.Remove:
- Bolt (shift pedal)
- Bolts (left footrest bracket)
- Left footrest bracket ①

NOTE:
When removing shift pedal, shift the transmission into 1st gear.



DRIVE CHAIN

1.Remove:
- Drive chain case ①



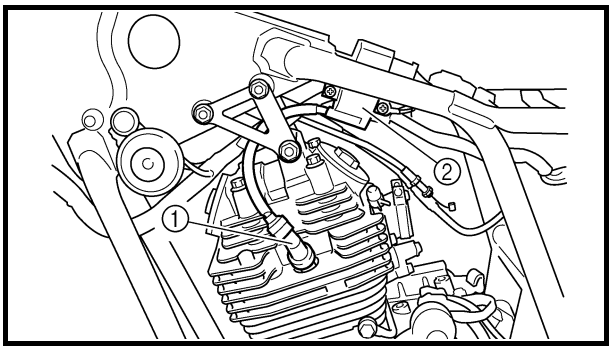
2.Remove:
- Lock washer ①
- Drive sprocket ②

3.Loosen:
- Rear wheel axle nut
- Locknuts
- Drive chain adjuster nuts

CARBURETOR

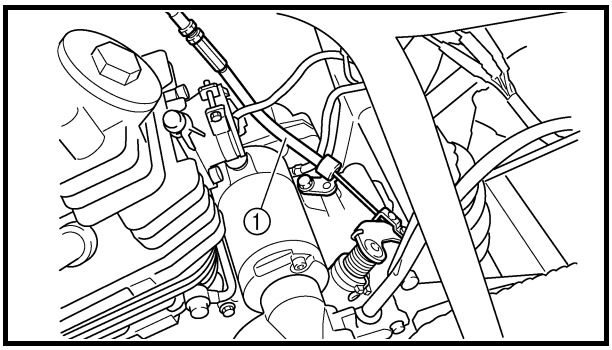
1.Remove:
- Carburetor

  Refer to the “CARBURETOR” section in CHAPTER 5.



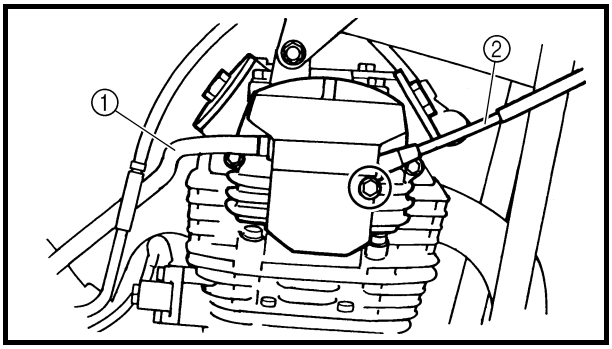
WIRE, CABLE AND TUBE

1.Remove:
- Spark plug lead cap ①
- Ignition coil ②

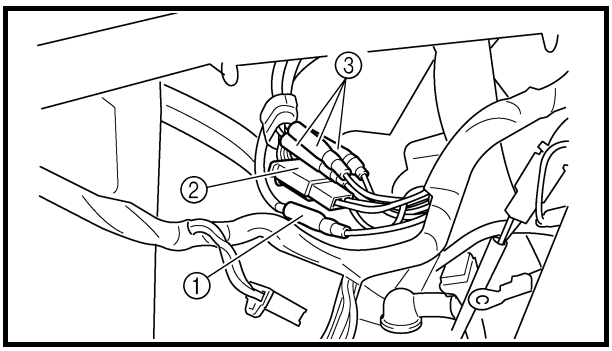


2.Straighten:
- Stopper

3.Remove:
- Clutch cable ①



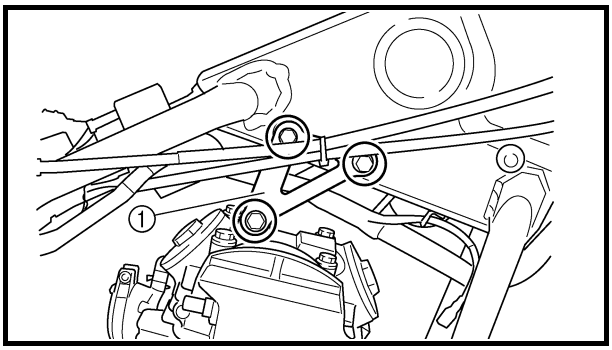
4.Remove:
- Breather hose ①
- Tachometer cable ②



5.Remove:
- Neutral switch lead ①
- Generator lead coupler ②
- Generator leads ③

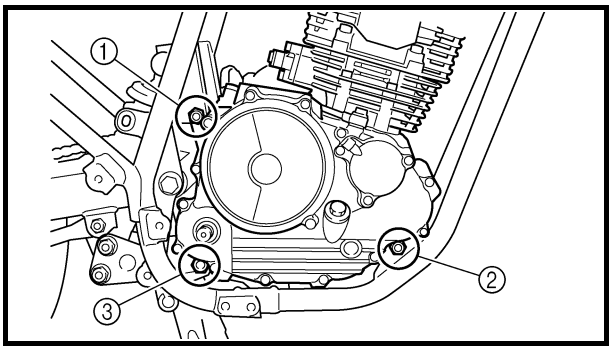
STARTER MOTOR

1.Remove:
- Starter motor
  Refer to the “ELECTRIC STARTING SYSTEM” in CHAPTER 7.



ENGINE

1.Remove:
- Engine mounting bracket ①



2.Remove:
- Rear upper mounting bolt ①
- Front mounting bolt ②
- Rear lower mounting bolt ③

ENGINE INSTALLATION

ENGINE ASSEMBLY

⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over when installing engine.

1.Install:
- Engine assembly
- Rear lower mounting bolt
- Rear upper mounting bolt

Rear lower mounting bolt:
79 Nm (7.9 m • kg)
Rear upper mounting bolt:
58 Nm (5.8 m • kg)

2.Install:
- Front mounting bolt

Front mounting bolt:
58 Nm (5.8 m • kg)

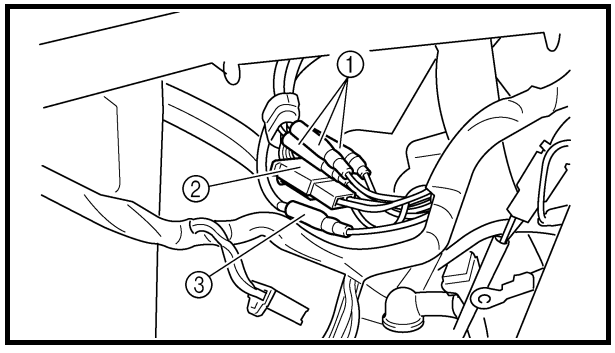
3.Install:
- Engine mounting bracket
- Bolt (engine mounting bracket-frame)
- Bolt (engine mounting bracket-engine)

Bolt (engine mounting bracket-frame):
30 Nm (3.0 m • kg)
Bolt (engine mounting bracket-engine):
58 Nm (5.8 m • kg)

STARTER MOTOR

1.Install:
- Starter motor

  Refer to the “ELECTRIC STARTING SYSTEM” in CHAPTER 7.



WIRE AND CABLES

1.Install:
- Generator leads ①
- Generator lead coupler ②
- Neutral switch lead ③

2.Install:
- Tachometer cable
- Breather hose

3.Install:
- Clutch cable

4.Install:
- Ignition coil
- Spark plug lead cap

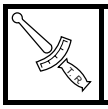
CARBURETOR

1.Install:
- Carburetor

  Refer to the “CARBURETOR” section in CHAPTER 5.

DRIVE CHAIN

1.Install:
- Drive chain
- Drive sprocket
- Lock washer



Nut (drive chain):
110 Nm (11.0 m • kg)

2.Install:
- Drive chain case

LEFT FOOTREST BRACKET

1.Install:
- Left footrest bracket

Bolt (shift arm):
10 Nm (1.0 m • kg)
Bolt (footrest bracket):
30 Nm (3.0 m • kg)

EXHAUST ASSEMBLY

1.Install:
- Muffler
- Nut (muffler)
- Bolts (muffler)

2.Install:
- Exhaust pipe

3.Tighten:
- Bolt (exhaust pipe joint)

4.Tighten:
- Nuts
- Bolts

Nuts (exhaust pipe):
18 Nm (1.8 m • kg)
Bolt (exhaust pipe joint):
20 Nm (2.0 m • kg)
Bolts (muffler)
30 Nm (3.0 m • kg)

5.Install:
- Right footrest bracket
- Bolts (right footrest bracket)

FUEL TANK AND SEAT

1.Install:
- Fuel tank
- Seat

  Refer to the “SEAT, FUEL TANK REMOVAL AND INSTALLATION” section in CHAPTER 3.

2.Fill:
- Engine oil

  Into crankcase

  Refer to the “ENGINE OIL REPLACEMENT” section in CHAPTER 3.

3.Adjust:
- Throttle cable free play
- Clutch lever free play

Refer to the “THROTTLE CABLE ADJUSTMENT”, “CLUTCH ADJUSTMENT” section in CHAPTER 3.

Throttle cable free play:
3 ~ 5 mm
Clutch lever free play:
10 ~ 15 mm

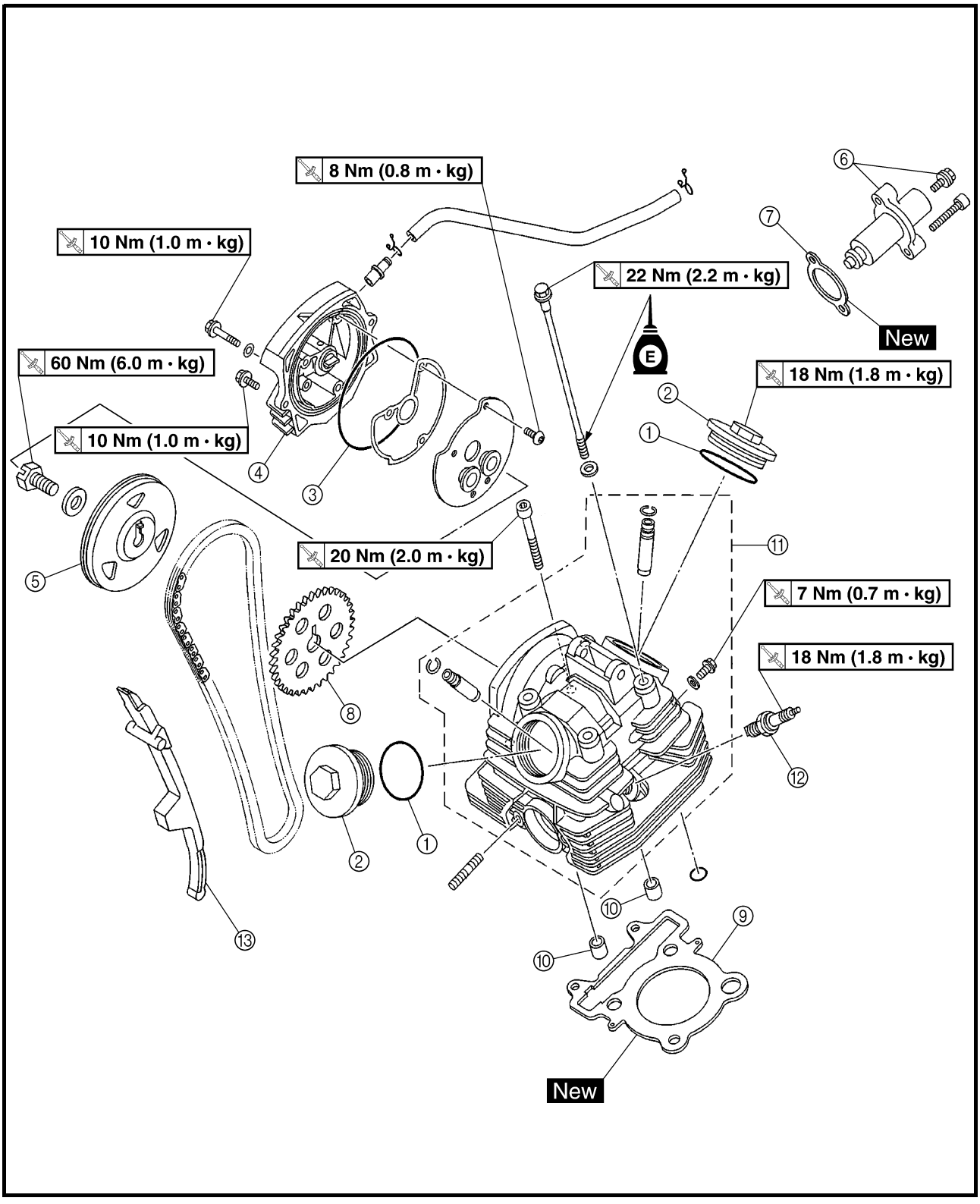
4.Adjust:
- Drive chain slack

Refer to the “DRIVE CHAIN SLACK ADJUSTMENT” section in CHAPTER 3.

Drive chain slack:
20 ~ 30 mm

CYLINDER HEAD

① O-ring
② Tappet cover
③ O-ring
④ Camshaft sprocket cover
⑤ Plate
⑥ Cam chain tensioner
⑦ Gasket
⑧ Camshaft sprocket
⑨ Gasket
⑩ Dowel pin
⑪ Cylinder head
⑫ Spark plug
⑬ Timing chain guide (exhaust side)



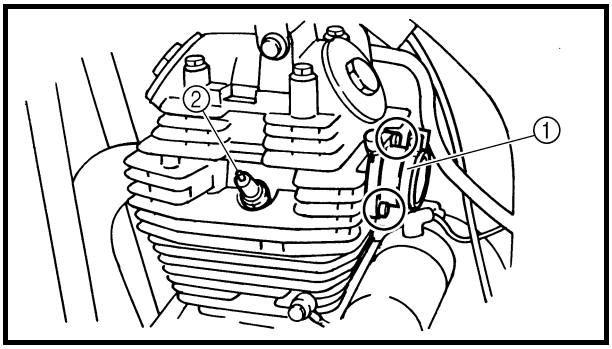
CYLINDER HEAD REMOVAL

NOTE:
Prior to remove the cylinder head, remove the seat, fuel tank and air scoop, and drain the engine oil.

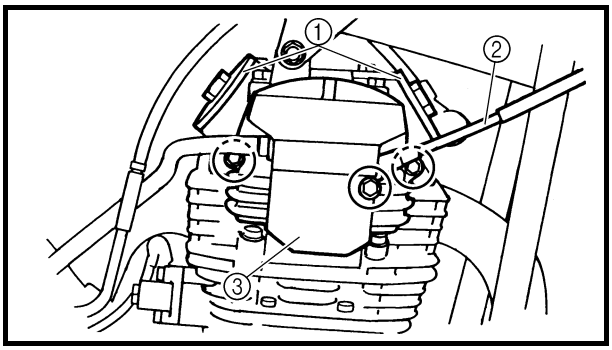
1.Remove:
- Exhaust pipe assembly
  Refer to the “ENGINE REMOVAL” section in CHAPTER 3.

2.Remove:
- Carburetor
  Refer to the “CARBURETOR” section in CHAPTER 5.

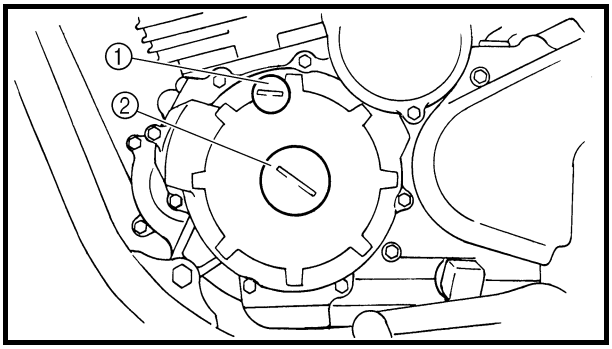
3.Remove:
- Carburetor joint ①
- Spark plug ②



4.Remove:
- Tappet cover ①
- Tachometer cable ②
- Camshaft sprocket cover ③



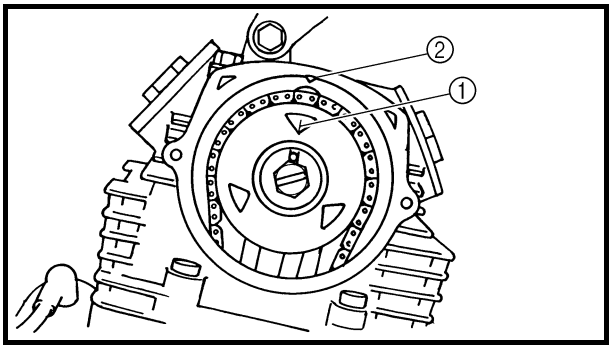
5.Remove:
- Timing mark accessing screw (with O-ring) ①
- Camshaft end cover (with O-ring) ②

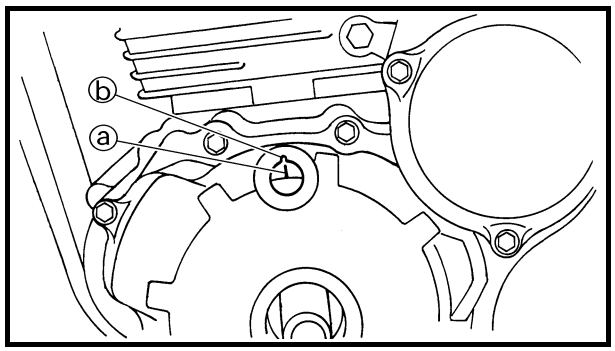


6.Align:
- Camshaft sprocket “I” mark
  With the stationary pointer on the cylinder head.

****

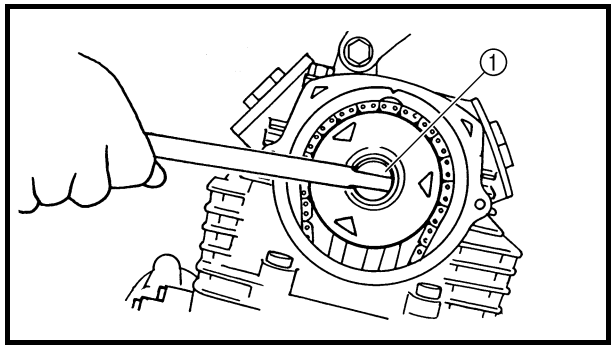
TDC alignment steps:
- Turn the crankshaft counter clockwise with a wrench.
- Align the camshaft sprocket “I” mark ① with the stationary pointer ② on the cylinder head. When the “I” mark is aligned with the stationary pointer, the piston is at Top Dead Center (TDC).





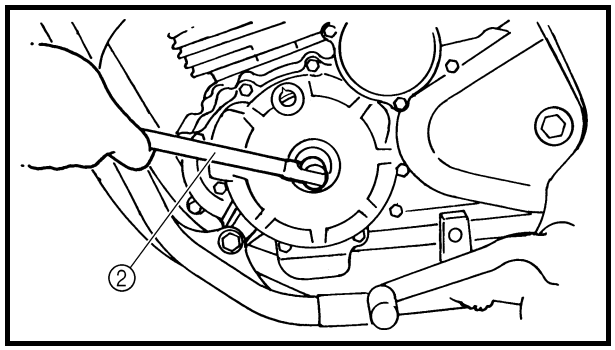
NOTE:
TDC on compression stroke check:
- Both rocker arms must have a valve clearance when the "I" mark ⓐ on the flywheel is aligned with the slit ⓑ on the crankcase cover.
- If not, give the crankshaft one counter clockwise turn to meet above condition.

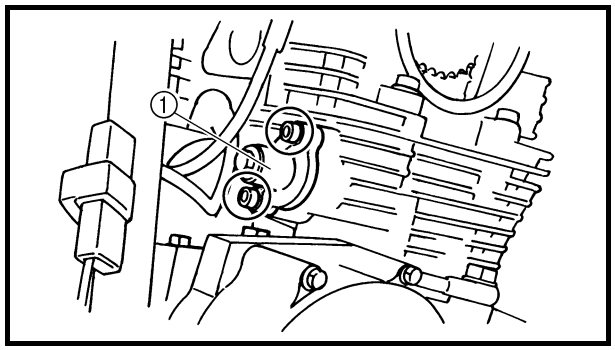
****



7.Loosen:
- Bolt (camshaft sprocket) ①

NOTE:
Hold the crankshaft end with a wrench ②.





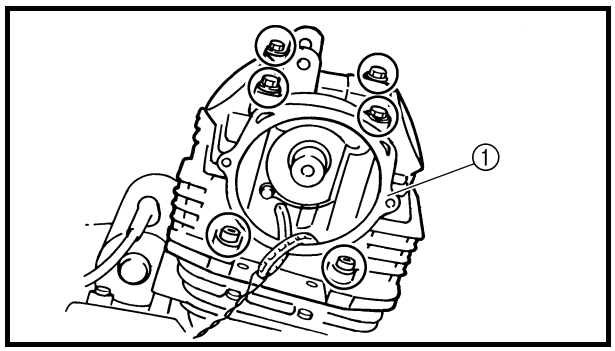
8.Remove:
- Cam chain tensioner ①

9.Remove:
- Camshaft sprocket

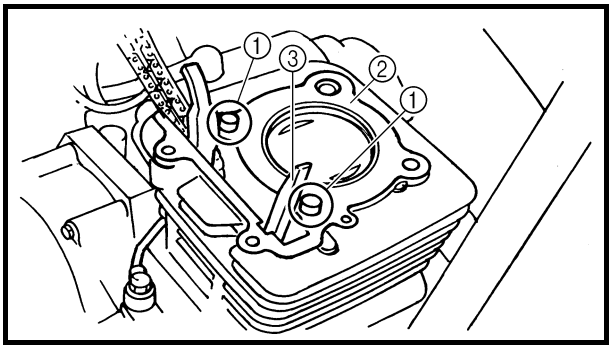
NOTE:
Fasten a safety wire to the cam chain.

10.Remove:
- Engine mounting bracket
  Refer to the "ENGINE REMOVAL" section.

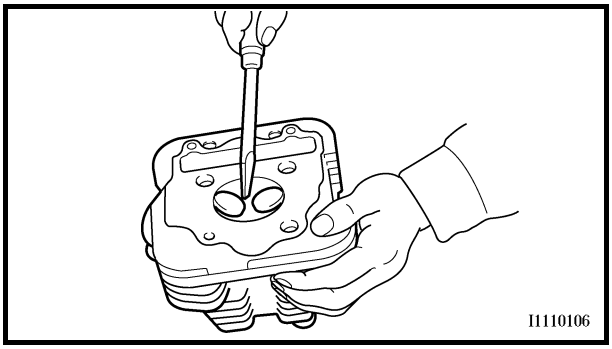
11.Remove:
- Cylinder head ①



NOTE:
Loosen the bolts in this stage, using a criss-cross pattern.



12.Remove:
- Dowel pins ①
- Gasket (cylinder head) ②
- Timing chain guide (exhaust side) ③



CYLINDER HEAD INSPECTION

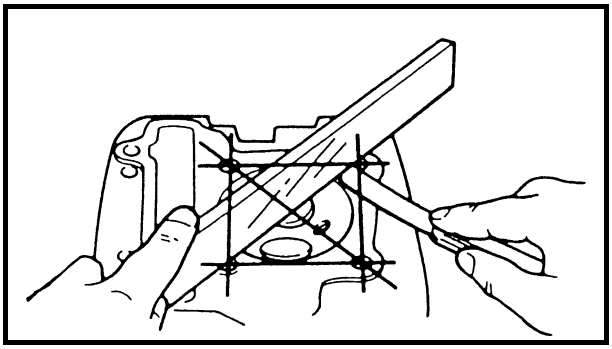
1.Eliminate:
- Carbon deposits
  (from combustion chambers)
  Use a rounded scraper.

NOTE:

Do not use a sharp instrument to avoid damaging or scratching:
- Spark plug threads
- Valve seats

2.Inspect:
- Cylinder head
  Scratches/damage → Replace.

3.Measure:
- Cylinder head warpage
  Out of specification → Resurface.



Cylinder head warpage:
Less than 0.03 mm

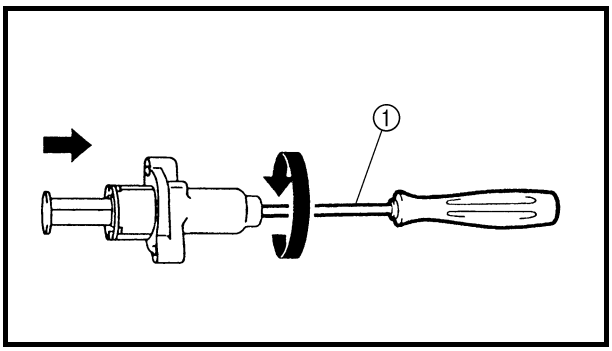
****

Warpage measurement and resurfacement steps:
- Place a straightedge and feeler gauge across the cylinder head.
- Measure the warpage.
- If the warpage is out of specification, resurface the cylinder head.
- Place a 400 ~ 600 grit wet abrasive paper on the surface plate, and resurface the head using a figure-eight sanding pattern.

NOTE:

Rotate the cylinder head several times for an even resurfacement.

****



TIMING CHAIN TENSIONER INSPECTION

1. Check:
- timing chain tensioner
  Cracks/damage/rough movement → Replace.

****

a. Lightly press the timing chain tensioner rod into the timing chain tensioner housing by hand.

NOTE:

While pressing the timing chain tensioner rod, wind it clockwise with stopper ① until it stops.

b. Remove your finger and slowly release the timing chain tensioner rod.

c. Make sure that the timing chain tensioner rod comes out of the timing chain tensioner housing smoothly. If there is rough movement, replace the timing chain tensioner.

****

CYLINDER HEAD INSTALATION

1.Install:

- Cylinder

Bolt:
22 Nm (2.2 m • kg)
Bolt:
20 Nm (2.0m • kg)

2.Install:

- Camshaft sprocket
- Timing chain
- Washer
- Bolt (camshaft sprocket)

****

Camshaft sprocket installing steps (rear cylinder):

- Turn the crankshaft counter clockwise with wrench.
- Align the mark “I” on the flywheel with the slit on the crankcase cover.
- Install the camshaft sprocket with the “I” mark facing outward.
- Force the camshaft counter clockwise to remove the cam chain slack.
- Insert your finger into the cam chain tensioner hole, and push the cam chain damper inward.
- While pushing the cam chain damper be sure the camshaft sprocket “I” mark ① aligns with the stationary pointer ② on the cylinder head at TDC.
- If marks are aligned, tighten the camshaft sprocket bolt temporary.
- If marks do not align, change the meshing position of sprocket and chain.

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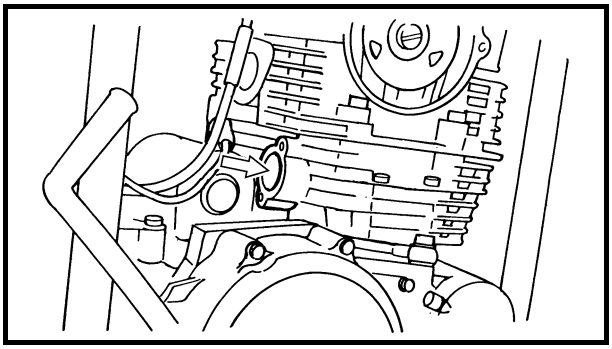
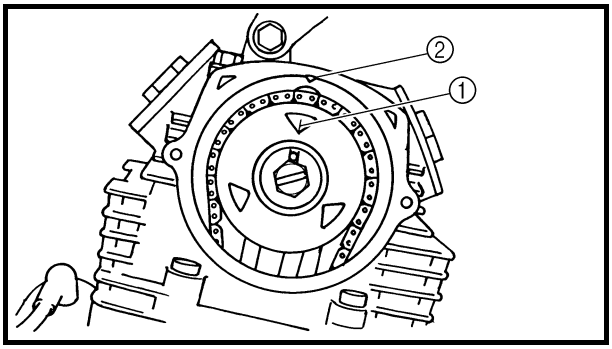
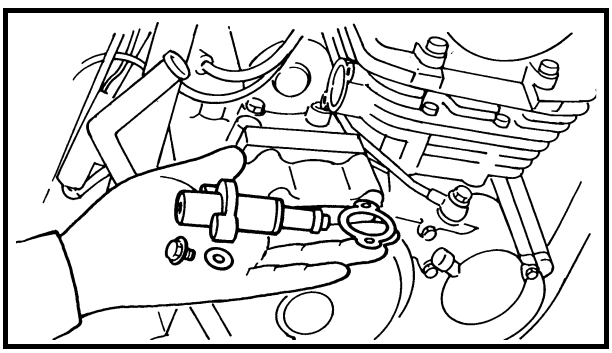
3.Install:

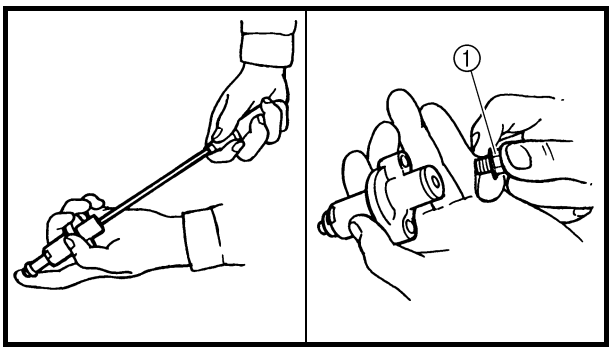
- Gasket (new)
- Timing chain tensioner

NOTE:
Use the gasket (new).









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Timing chain tension installation steps:

- Turn the stopper clockwise.
- Hold the stopper with the bolt ①.
- Install the tensioner with a new gasket into the cylinder.

	Bolt (tensioner-cylinder): **10 Nm (1.0 m • kg)**

****

4.Tighten:

- Bolt (camshaft sprocket)

	Bolt (camshaft sprocket): **60 Nm (6.0 m • kg)**

5.Check:

- Alignment marks

  If the marks do not align → Adjust.

6.Adjust:

- Valve clearance

Refer to the "VALVE CLEARANCE ADJUSTMENT" section in CHAPTER 3.

	Intake valve (cold): **0.05 ~ 0.10 mm** **Exhaust valve (cold):** **0.10 ~ 0.15 mm**

7.Install:

- Tappet cover
- Camshaft sprocket cover

	Tappet cover: **18 Nm (1.8 m • kg)** **Camshaft sprocket cover:** **10 Nm (1.0 m • kg)**

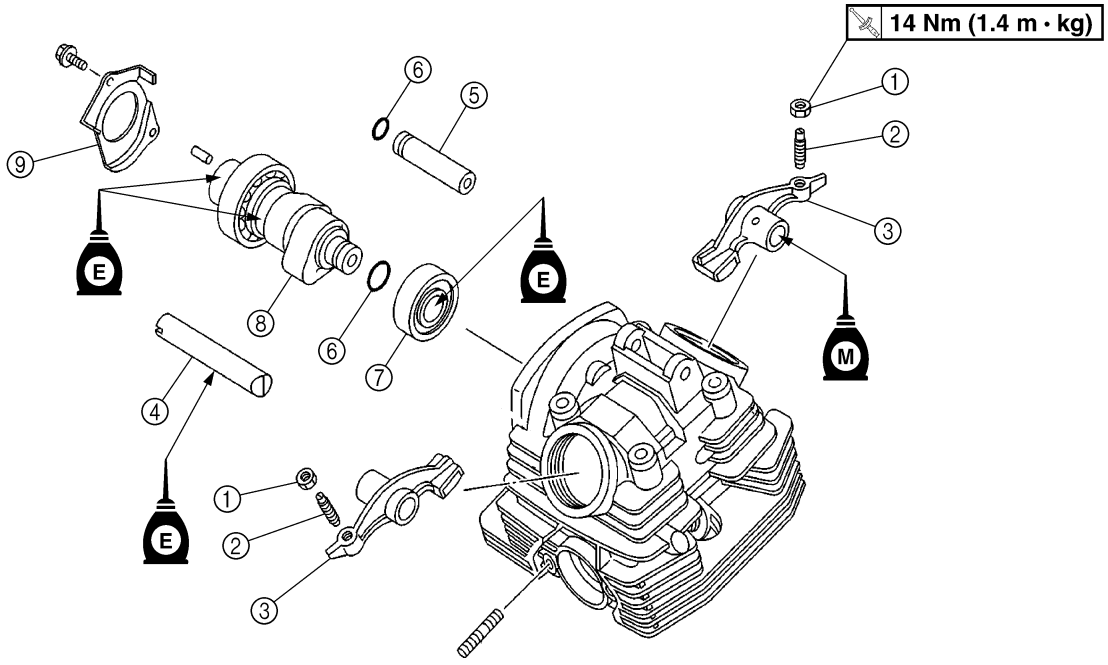
8.Install:

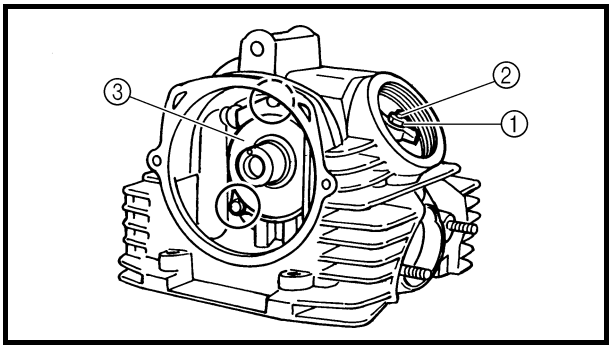
- Spark plug
- Carburetor joint

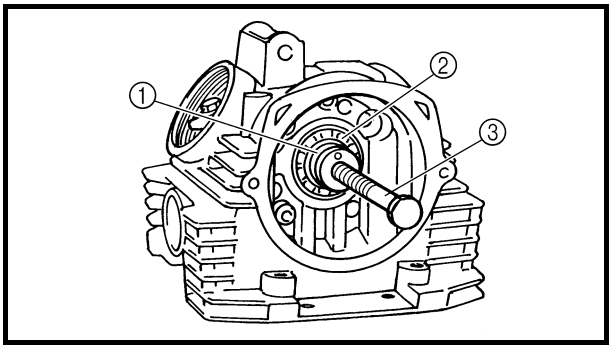
	Spark plug: **18 Nm (1.8 m • kg)** **Carburetor joint:** **10 Nm (1.0 m • kg)**

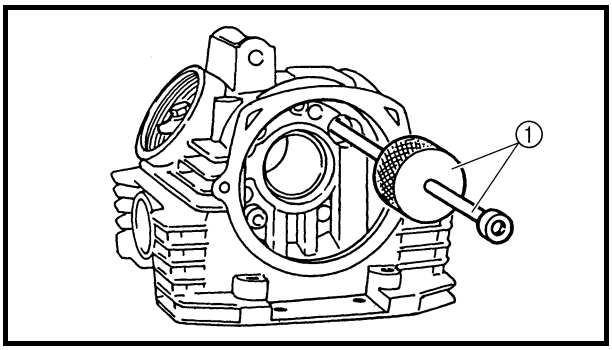
CAMSHAFT AND ROCKER ARMS

① Locknut
② Valve adjuster
③ Rocker arm
④ Rocker arm shaft (exhaust)
⑤ Rocker arm shaft (intake)
⑥ O-ring
⑦ Bearing
⑧ Camshaft
⑨ Plate









ROCKER ARM AND CAMSHAFT REMOVAL

NOTE:
Prior to remove the rocker arm and camshaft, remove the cylinder head.

1.Loosen:
- Locknut ①
- Valve adjuster ②

2.Remove
- Stopper plate ③

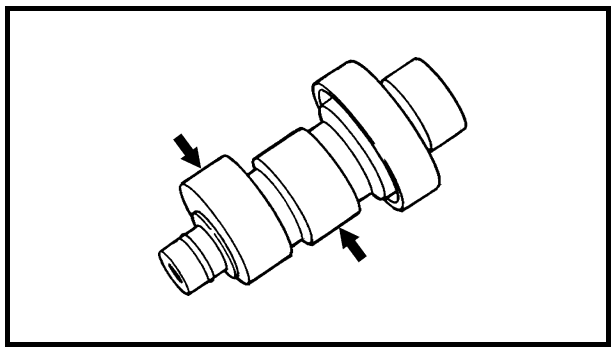
3.Remove:
- Camshaft ①
- Bearing ②

NOTE:
Remove the camshaft and collar by using 10 mm bolt ③.

4.Attach:
- Slide hammer set ①

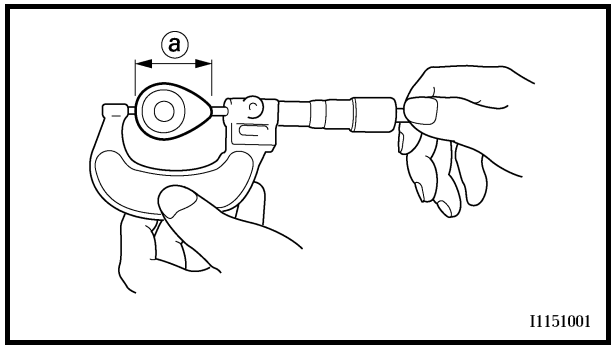
Slide hammer bolt:
90890-01085
Weight:
90890-01084

5.Remove:
- Rocker arm shaft
- Rocker arm (intake/exhaust)



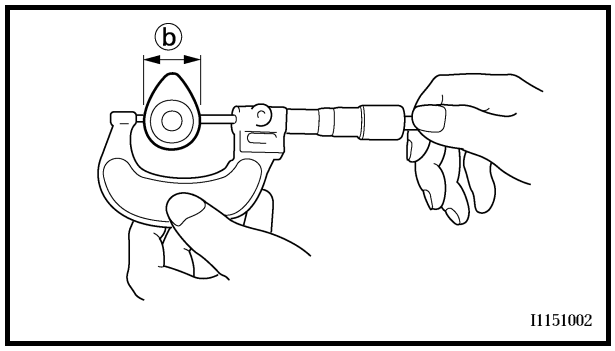
YP402052
CAMSHAFT INSPECTION

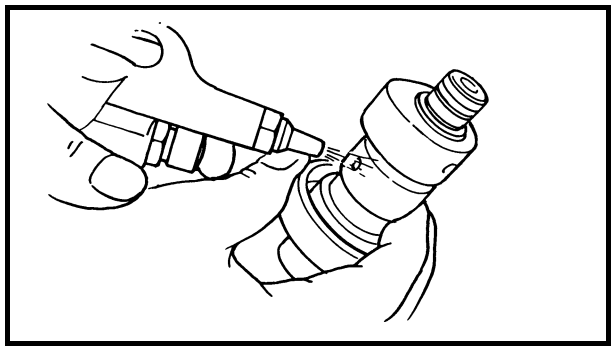
1.Inspect:
- Cam lobes
  Pitting/Scratches/Blue discoloration → Replace.



2.Measure:
- Cam lobes length ⓐ and ⓑ.
  Out of specification → Replace.

Cam lobes length:
Intake:
ⓐ 36.52 ~ 36.62 mm
<Limit: 36.42 mm>
ⓑ 30.201 ~ 30.301 mm
<Limit: 30.1 mm>
Exhaust:
ⓐ 36.564 ~ 36.664 mm
<Limit: 36.46 mm>
ⓑ 30.216 ~ 30.316 mm
<Limit: 30.12 mm>

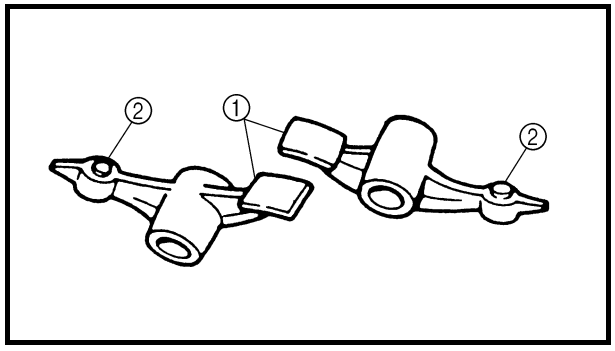




3.Inspect:
- Camshaft oil passage
  Stuffed → Blow out oil passage with compressed the air.

YP402060
ROCKER ARMS AND ROCKER ARM SHAFTS INSPECTION

1.Inspect:
- Cam lobe contact surface ①
- Adjuster surface ②
  Wear/Pitting/Scratches/Blue discoloration → Replace.



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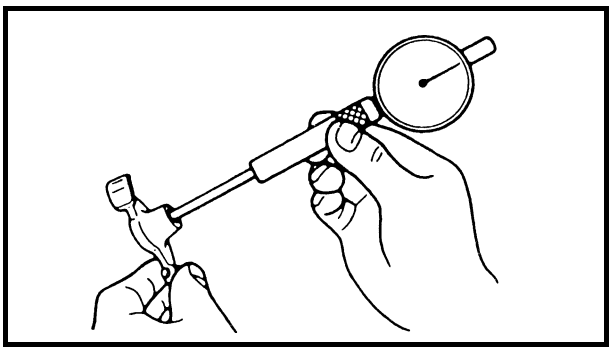
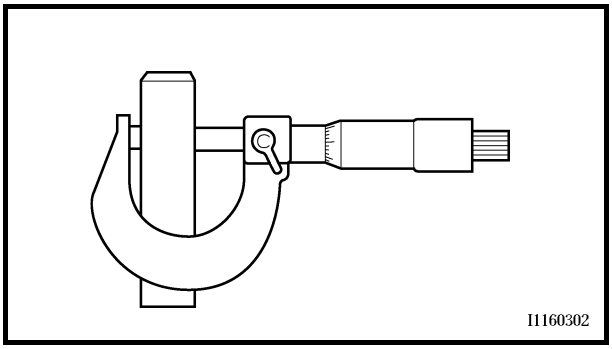
Inspection steps:
- Inspect the two contact areas on the rocker arms for signs of unusual wear.
- Rocker arm shaft hole.
- Cam-lobe contact surface.
- Excessive wear → Replace.





- Inspect the surface condition of the rocker arm shafts.
- Pitting/scratches/blue discoloration → Replace or check lubrication.
- Measure the inside diameter of the rocker arm holes.
  Out of specification → Replace.

Inside diameter (rocker arm):
14.992 ~ 15.000 mm
<Limit: 15.02 mm>

- Measure the outside diameter of the rocker arm shafts.
  Out of specification → Replace.

Outside diameter
(rocker arm shaft):
14.960 ~ 14.981 mm
<Limit 14.94 mm>

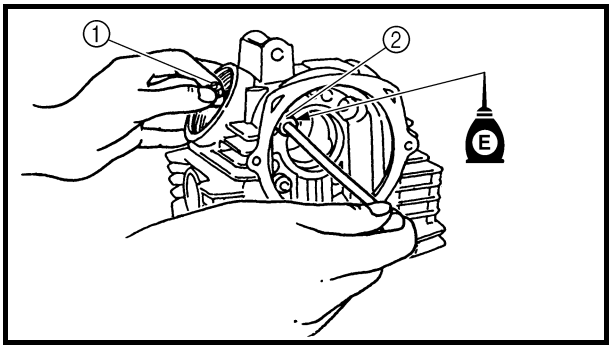
****

YP******

CAMSHAFT AND ROCKER ARM INSTALLATION

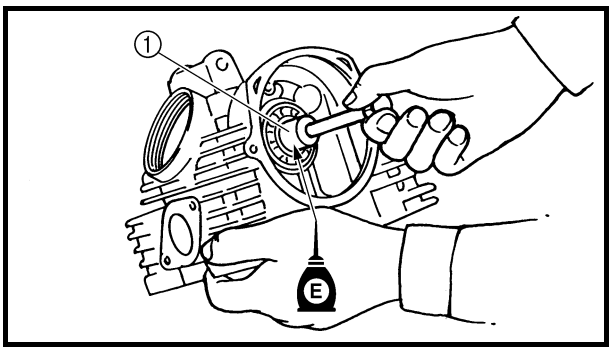
1.Lubricate:
- Rocker arm shaft
- Rocker arm inner surface

Rocker arm shaft:
Engine oil
Rocker arm inner surface:
Molybdenum disulfide grease



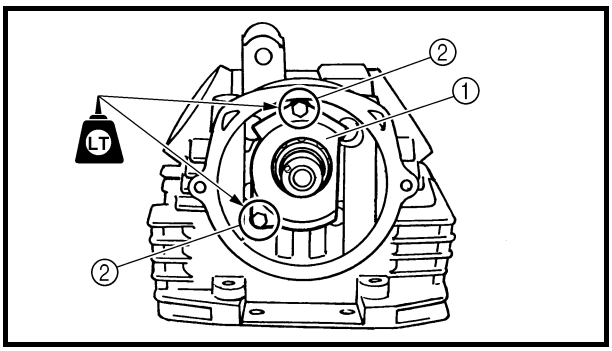
2.Install:
- Rocker arm ①
- Rocker arm shaft ②

NOTE:
Install the rocker arm shaft (exhaust) completely pushed in.



3.Lubricate:
- Camshaft ①

Camshaft:
Molybdenum disulfide grease
Camshaft bearing:
Engine oil

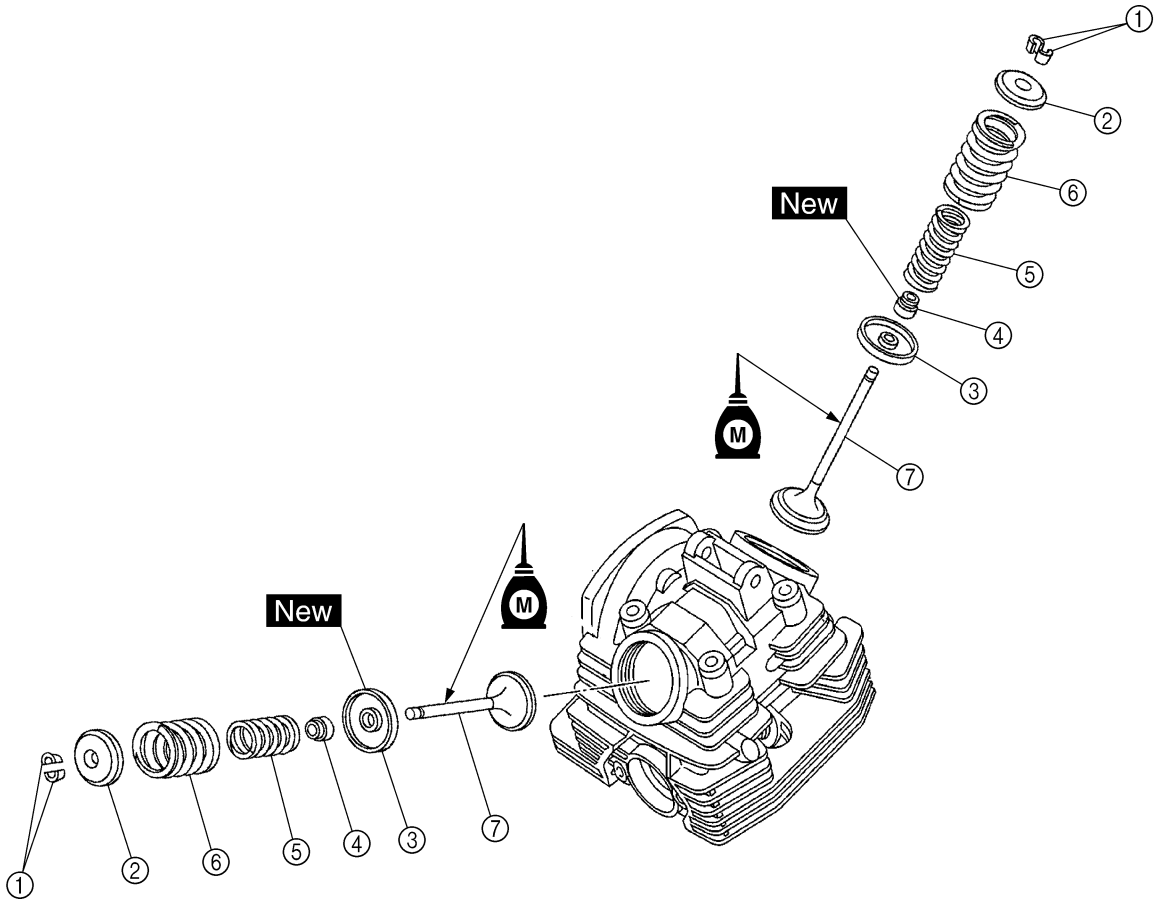


4.Install:
- Plate ①
- Bolts ②

8 Nm (0.8 m • kg)

VALVES AND VALVE SPRINGS

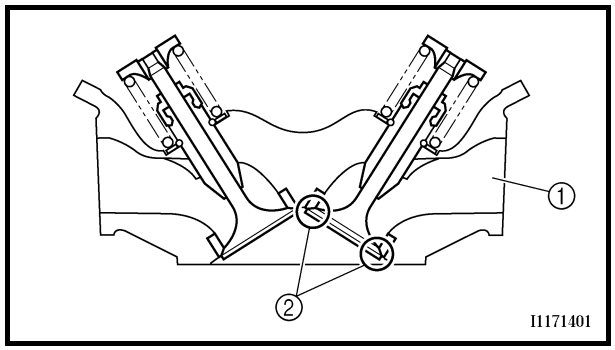
① Valve cotter
② Upper spring seat
③ Lower spring seat
④ Oil seal
⑤ Inner valve spring
⑥ Outer valve spring
⑦ Valve



VALVE AND VALVE SPRINGS REMOVAL

NOTE:
- Prior to remove the valves, remove the cylinder head, rocker arm and camshaft.
- Before removing the internal parts (Valve, valve spring, valve seat etc.) of the cylinder head, the valve sealing should be checked.

1.Check:
- Valve sealing
  Leakage at valve seat → Inspect the valve face, valve seat and valve seat width.
  Refer to the “VALVE SEATS INSPECTION” section.



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Valve seat checking steps:
- Pour a clean solvent ① into the intake and exhaust ports.
- Check the valve seating.
  There should be no leakage at the valve seat ②.

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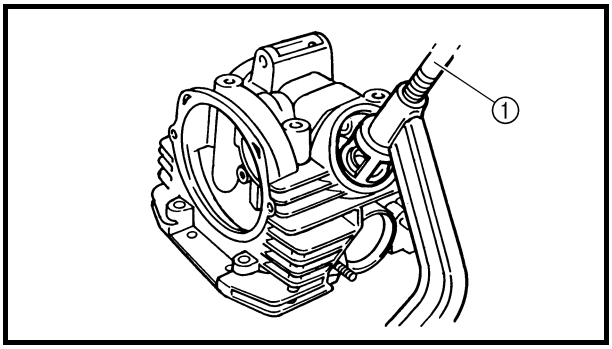
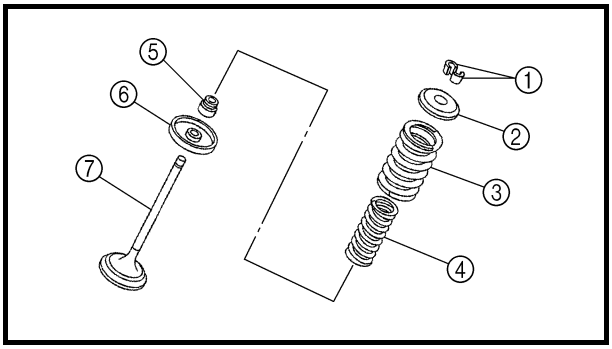


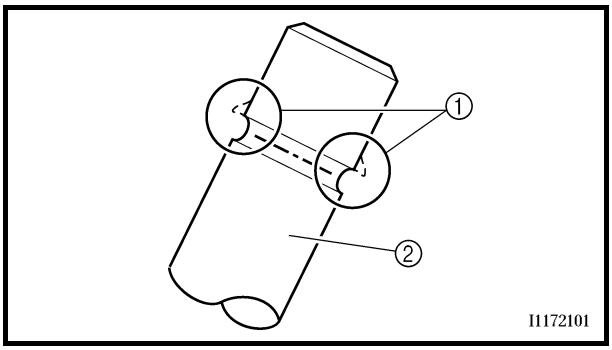
2.Attach:
- Valve spring compressor ①

	Valve spring compressor: 90890-04019



3.Remove:
- Valve cotters ①
- Upper spring seat ②
- Outer valve spring ③
- Inner valve spring ④
- Oil seal ⑤
- Lower spring seat ⑥
- Valve ⑦

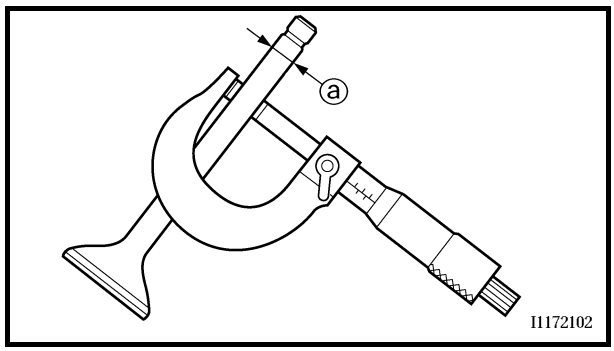
NOTE:
- Identify each part position very carefully so that it can be reinstalled in its original place.
- Deburr any deformed valve stem end. Use an oil stone to smooth the stem end.

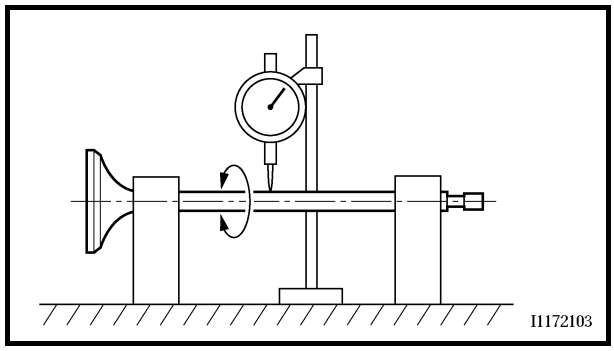


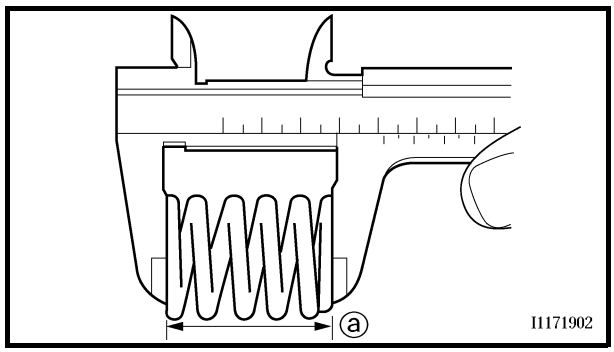
① Deburr
② Valve stem

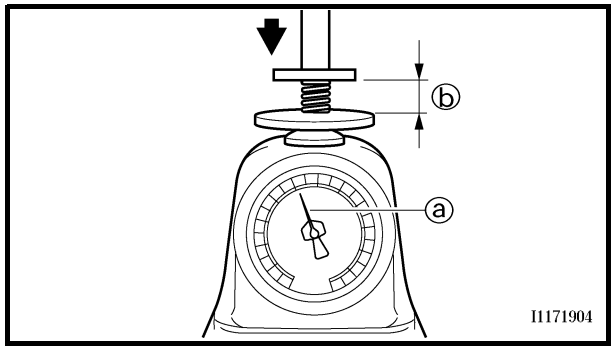
4.Eliminate:
- Carbon deposit
  From the combustion chamber.
  Use a rounded scraper.

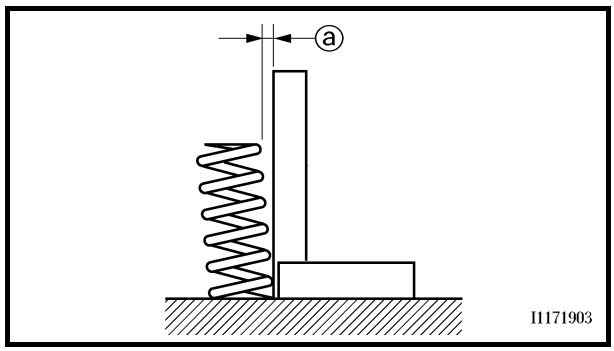
NOTE:
Do not use a sharp instrument and avoid damaging or scratching:
- Spark plug threads
- Valve seat
- Cylinder head











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VALVES AND VALVE SPRINGS

INSPECTION

1.Measure:

- Valve stem diameter ⓐ
  Out of specification → Replace.

Valve stem diameter:
Intake:
5.975 ~ 5.990 mm
<Limit: 5.95 mm>
Exhaust:
5.960 ~ 5.975 mm
<Limit: 5.935 mm>

YP402010

2.Measure:

- Runout (valve stem)
  Out of specification → Replace.

Runout limit
0.03 mm

YP402030

3.Measure:

- Free length (valve spring) ⓐ
  Out of specification → Replace.

Valve spring free length:
Inner valve spring:
36.17 mm
<Limit: 34.47 mm>
Outer valve spring:
36.63 mm
<Limit: 34.63 mm>

4.Measure:

- Compressed valve spring force ⓐ
  Out of specification → Replace.

ⓑ Installed length

Inner valve spring
30.5 mm at 7.65 ~ 9.35 kg
Outer valve spring
32 mm at 13.1 ~ 16.1 kg

YP402030

5.Measure:

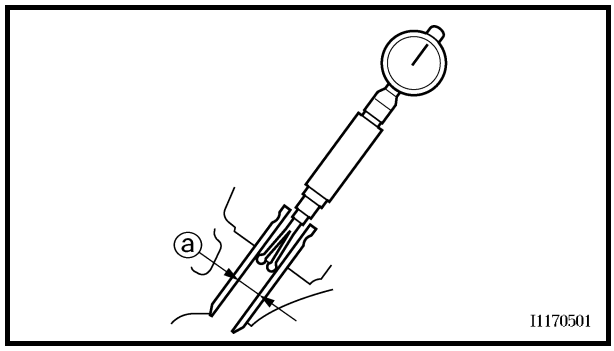
- Valve spring tilt ⓐ
  Out of specification → Replace.

Spring tilt limit:
2.5°/16 mm

6.Inspect:
- Spring contact face
  Wear/Pitting/Scratches → Replace.

7.Measure:
- Valve guide inside diameter
  Out of specification → Replace.

Valve guide inside diameter:
Intake:
6.000 ~ 6.012 mm
<Limit: 6.042 mm>
Exhaust:
6.000 ~ 6.012 mm
<Limit: 6.042 mm>



YP402010
8.Measure:

Stem-to-guide clearance =
Valve guide inside diameter ⓐ –
Valve stem diameter

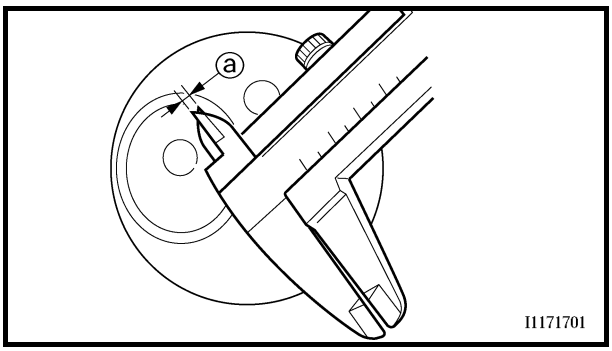
Out of specification → Replace the valve guide.

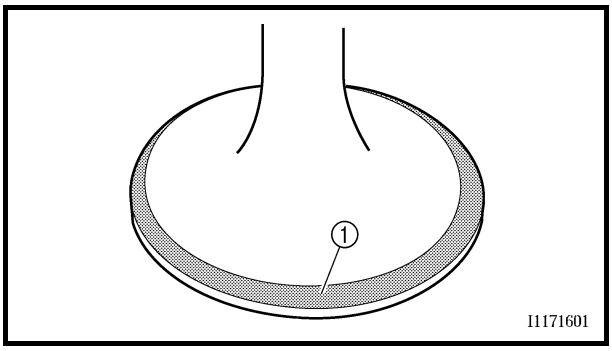
Stem-to-guide clearance limit:
Intake:
0.08 mm
Exhaust:
0.1 mm

EB402020
VALVE SEATS INSPECTION

1.Eliminate:
- Carbon deposits
  (from the valve face and valve seat)

2.Inspect:
- Valve seats
  Pitting/wear → Reface the valve seat.





3.Measure:
- Valve seat width ⓐ
  Out of specification → Reface the valve seat.

Valve seat width:
Intake:
0.9 ~ 1.1 mm
<Limit: 1.6 mm>
Exhaust:
0.9 ~ 1.1 mm
<Limit: 1.6 mm>

****

Measurement steps:
- Apply Mechanic's blueing dye (Dykem) ① to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Measure the valve seat width. Where the valve seat and valve face made contact, blueing will have been removed.
- If the valve seat is too wide, too narrow, or the seat is not centered, the valve seat must be replaced.

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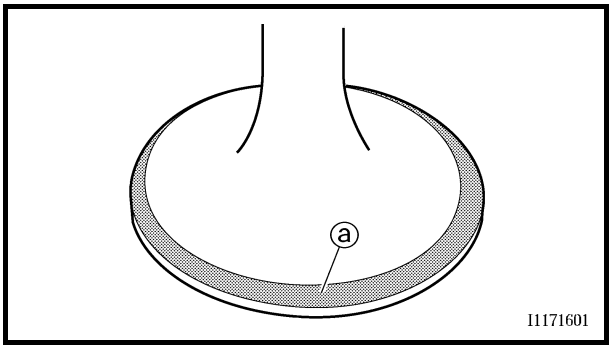
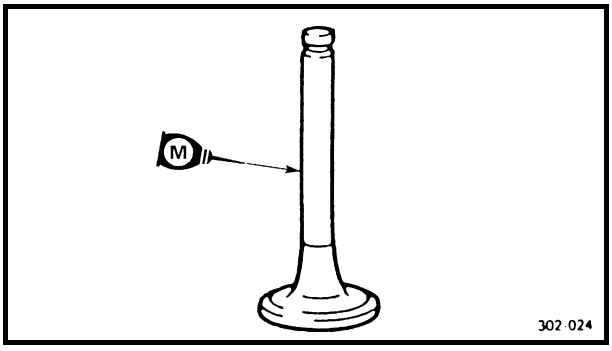




EB402020
4.Lap:
- Valve face
- Valve seat

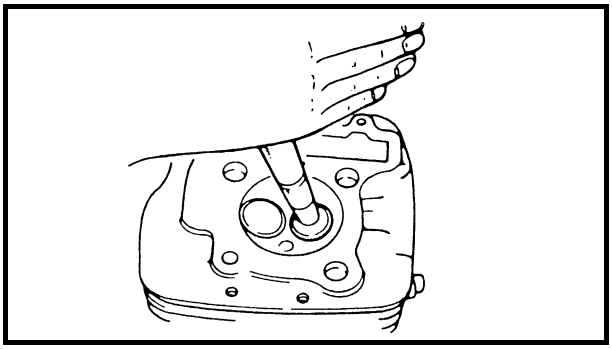
NOTE:
After replacing the valve seat, valve and valve guide, the valve seat and valve face should be lapped.

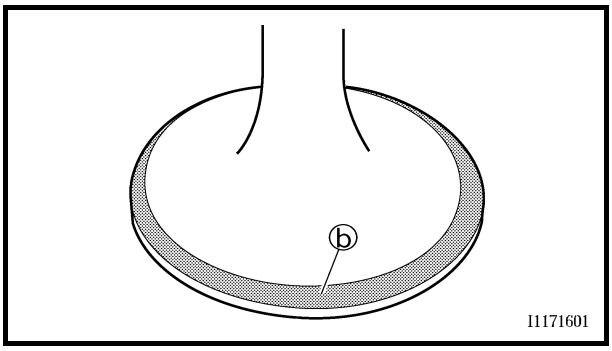
****

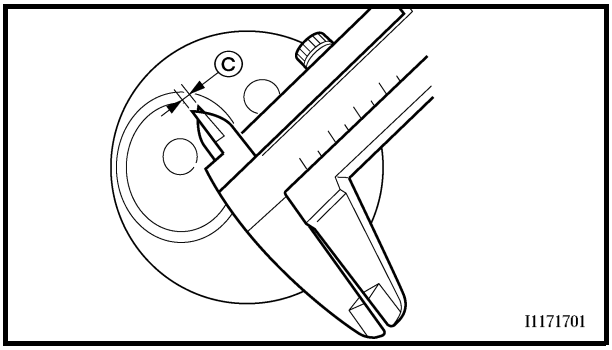
Lapping steps:
- Apply a coarse lapping compound ⓐ to the valve face.

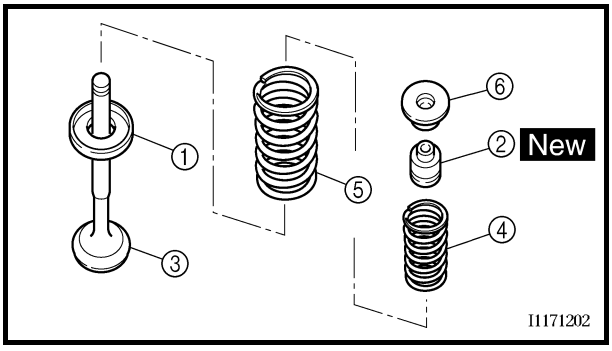
CAUTION:
Do not let compound enter the gap between the valve stem and the guide.

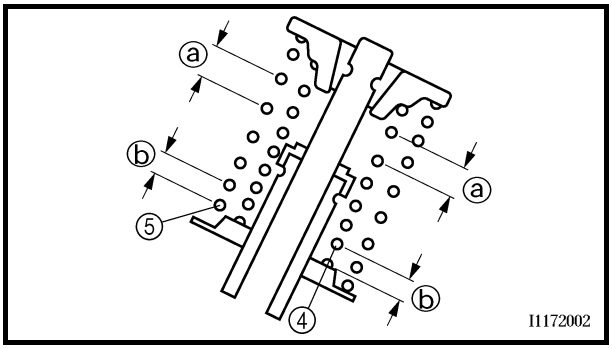
- Apply molybdenum disulfide oil to the valve stem.











- Install the valve into the cylinder head.
- Turn the valve unit the valve face and valve seat are evenly polished, then clean off all compound.

NOTE:
For best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hand.

- Apply a fine lapping compound to the valve face and repeat the above steps.

NOTE:
Make sure to clean off all compound from the valve face and valve seat after every lapping operation.

- Apply Mechanic's blueing dye (Dykem) ⓑ to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clean pattern.
- Measure the valve seat width ⓒ again.

****

EB404032
VALVES AND VALVE SPRINGS INSTALLATION

1.Deburr:
- Valve stem end
  Use an oil stone to smooth the stem end.

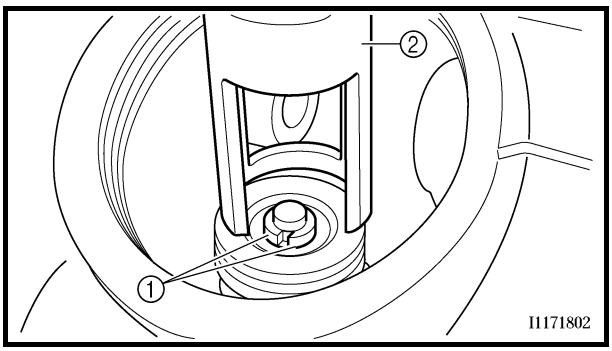
2.Apply:
- Molybdenum disulfide oil
  (onto the valve stem ③ and seal ②)

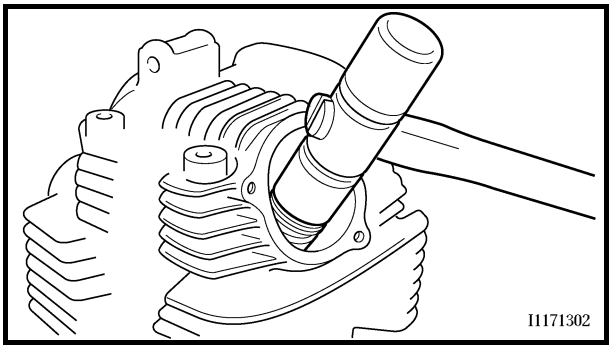
	Molybdenum disulfide oil

3.Install:
- Lower spring seat ①
- Oil seal ② New
- Valve ③
  (into the cylinder head)
- Inner valve spring ④
- Outer valve spring ⑤
- Upper spring seat ⑥

NOTE:
Install the valve spring with the larger pitch ⓐ facing upwards.

ⓑ Smaller pitch





4.Install:
- Valve cotters ①

NOTE:
Install the valve cotters while compressing the valve spring with a valve spring compressor ②.

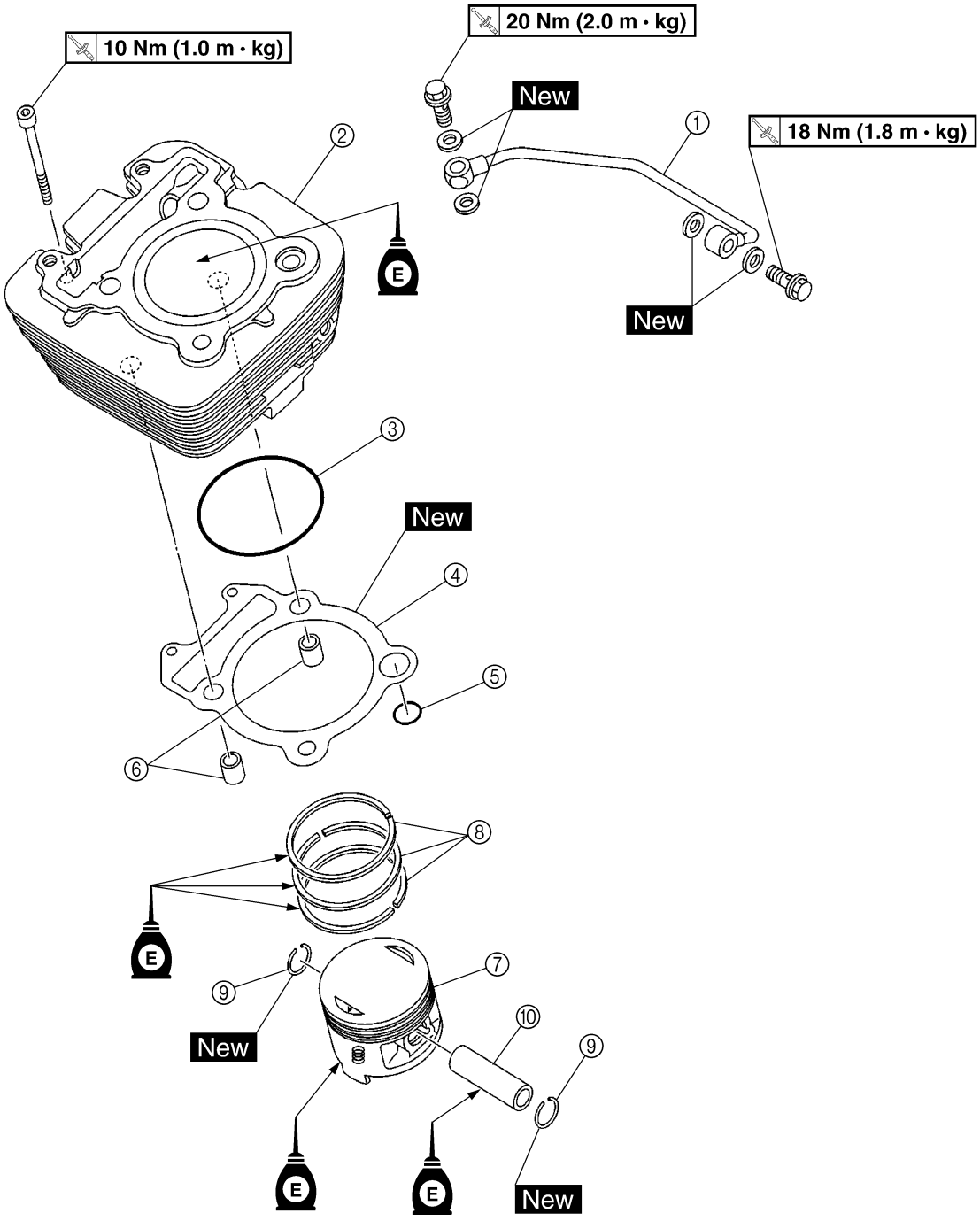
Valve spring compressor:
90890-04019

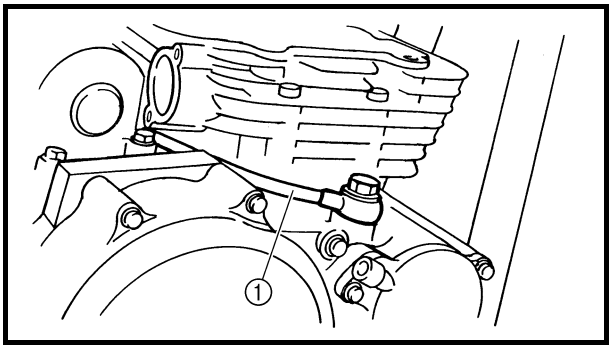
5.Secure the valve cotters onto the valve stem by tapping lightly with a piece of wood.

CAUTION:
Do not hit so much as to damage the valve.

CYLINDER AND PISTON

① Oil delivery pipe
② Cylinder
③ O-ring
④ Gasket
⑤ O-ring
⑥ Dowel pin
⑦ Piston
⑧ Piston rings
⑨ Piston pin clip
⑩ Piston pin

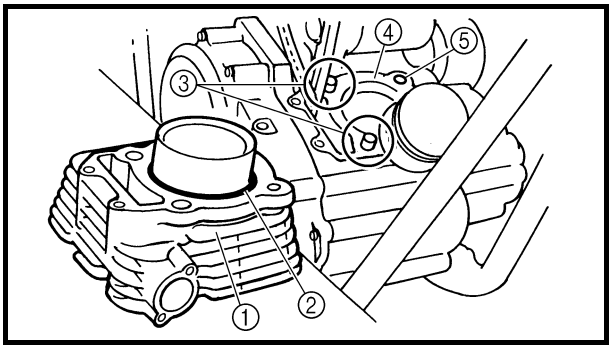




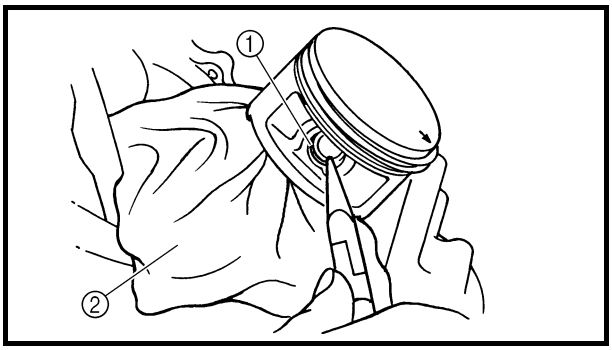
PISTON REMOVAL

NOTE:
Prior to remove the cylinder, remove the cylinder head, carburetor joint and exhaust pipe.

1.Remove:
- Oil delivery pipe ①

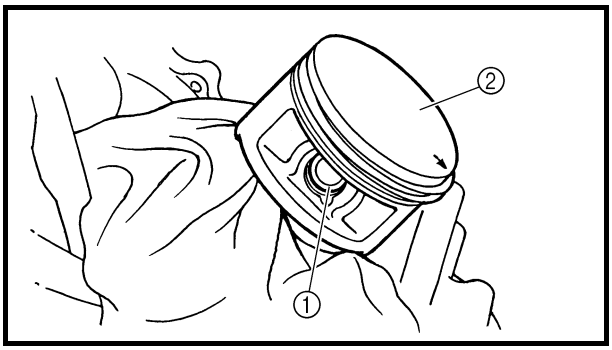


2.Remove:
- Cylinder ①
- O-ring ②
- Dowel pin ③
- Gasket ④ (cylinder)
- O-ring ⑤



3.Remove:
- Piston pin clip ①

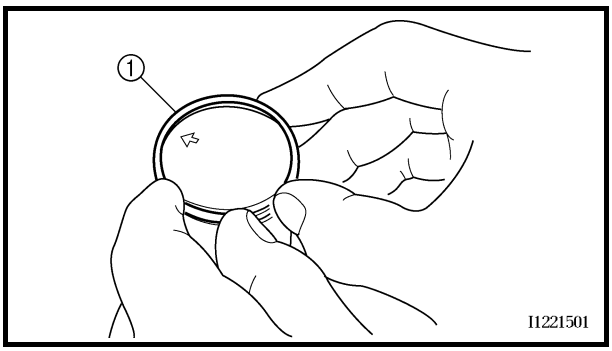
NOTE:
Before removing the piston pin clip cover the crankcase with a clean rag ② so you will not accidentally drop the clip into the crankcase.



4.Remove:
- Piston pin ①
- Piston ②

NOTE:
Before removing the piston pin, deburr the clip grooved and pin hole area. If the piston pin groove is deburred and piston pin is still difficult to remove use the piston pin puller.

CAUTION:
Do not use a hammer to drive the piston pin out.



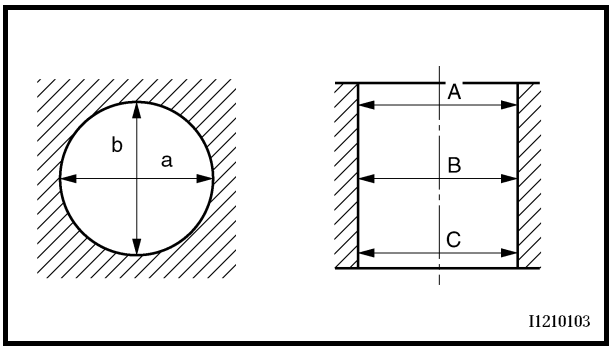
5.Remove:
- Piston rings ①

NOTE:
When removing a piston rings, open the end gap with your fingers and lift the other side of the ring over the piston crown.

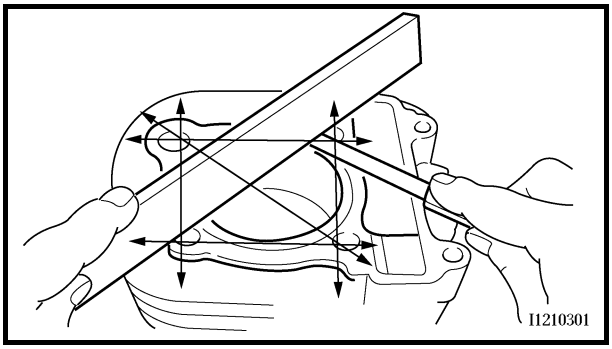
YP402100
CYLINDER INSPECTION

1.Measure:
- Cylinder bore
  Out of specification → Rebore or replace.

NOTE:
- Measure the cylinder bore with a cylinder bore gauge.
- Measure the cylinder bore in parallel to and at right angles to the crankshaft. Then, find the average of the measurements.

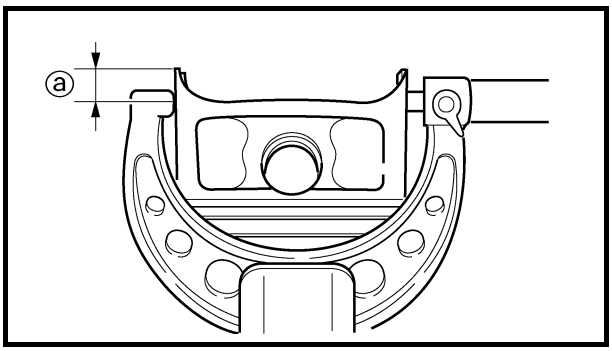


Cylinder bore:
70.000 ~ 70.018 mm
<Limit: 70.1 mm>
<Difference limit between A, B and C: 0.03 mm>



2.Measure:
- Warpage
  Out of specification → Replace.

Cylinder warpage limit:
0.01 mm



YP******
PISTON AND PISTON PIN INSPECTION

1.Measure:
- Piston skirt diameter
  Out of specification → Replace.

ⓐ 4.0 mm form the piston bottom edge

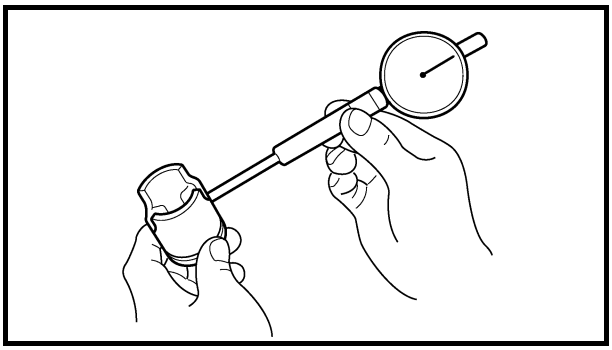
Piston skirt diameter:
69.977 ~ 69.996 mm
Oversize (2) 70.50 mm
Oversize (4) 71.00 mm

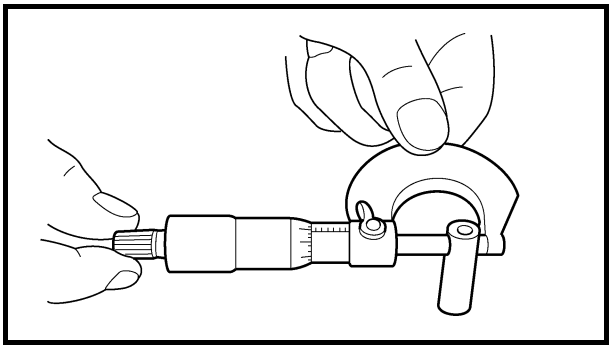
2.Calculate:
- Piston-to cylinder-clearance

Piston-to-cylinder clearance =
Cylinder bore – Piston skirt diameter

Refer to the “CYLINDER” section for cylinder bore measurement.
Out of specification → Replace the piston and piston rings as a set.

Piston-to-cylinder clearance:
0.020 ~ 0.025 mm
<Limit: 0.05 mm>





3.Measure:
- Piston pin bore diameter
  Out of specification → Replace.

Piston pin bore diameter:
16.002 ~ 16.013 mm
<Limit: 16.043 mm>

4.Measure:
- Piston pin outside diameter
  Out of specification → Replace.

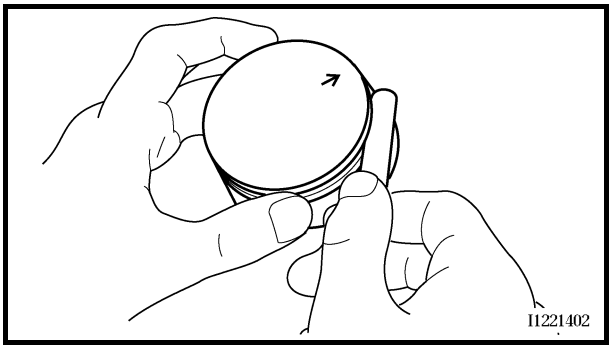
Piston pin outside diameter:
15.996 ~ 16.000 mm
<Limit 15.97 mm>

5.Inspect:
- Piston pin
  Blue discoloration/groove → Clean or replace.

YP402111
PISTON RINGS INSPECTION

1.Measure:
- Side clearance
  Out of specification → Replace the piston and the piston rings as a set.

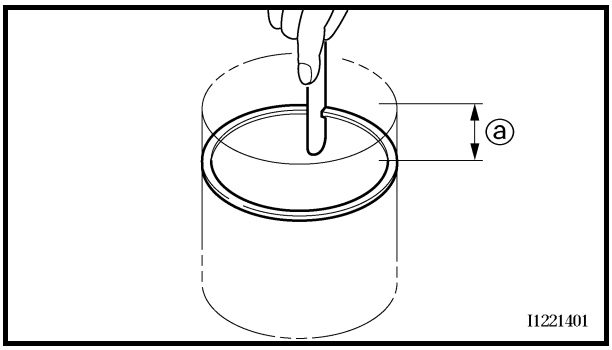
NOTE:
Eliminate the carbon deposits from the piston ring grooves and piston rings before measuring the side clearance.



Side clearance (piston ring):
Top ring:
0.03 ~ 0.07 mm
<Limit 0.1 mm>
2 nd ring:
0.02 ~ 0.06 mm
<Limit: 0.1 mm>

2.Position:
- Piston rings
  (into the cylinder)

NOTE:
Push the ring with the piston crown so that the ring will be at a right angle to the cylinder bore.

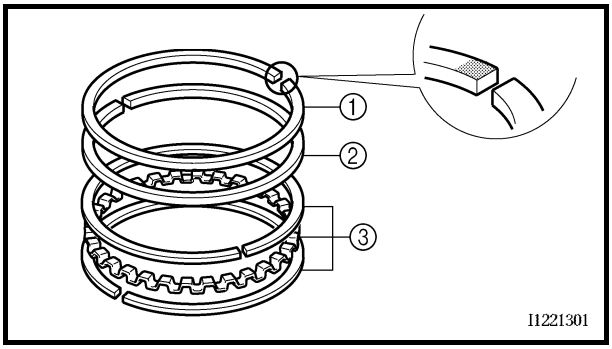


3.Measure:
End gap
Out of specification → Replace.

NOTE:
You cannot measure the end gap on the expander spacer of the oil ring. If the oil ring rails show excessive gap, replace all three rings.

ⓐ 40.0 mm

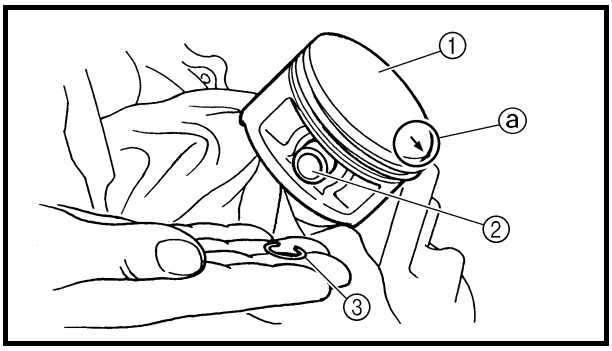
End gap:
Top ring
0.15 ~ 0.30 mm
<Limit: 0.6 mm>
2 nd ring:
0.15 ~ 0.30 mm
<Limit: 0.6 mm>
Oil ring:
0.3 ~ 0.9 mm



EB404184
PISTON RINGS, PISTON AND CYLINDER INSTALLATION

1.Install:
- Top ring ①
- 2nd ring ②
- Oil ring ③

NOTE:
- Make sure to install the piston rings so that the manufacture's marks or numbers are located on the upper side of the rings.
- Lubricate the pistons and piston rings liberally with engine oil.

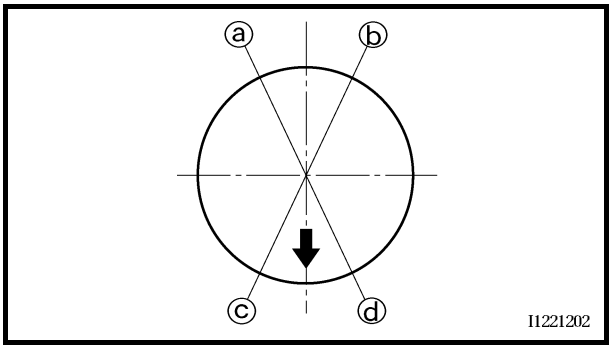


2.Install:
- Piston ①
- Piston pin ②
- Piston pin clip ③ New

NOTE:
- Apply engine oil onto the piston pins.

The "→" mark ⓐ on the piston must face the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- Make sure to install each piston in its respective cylinder.

3.Install:
- O-ring
- Gasket (cylinder) New
- Dowel pins



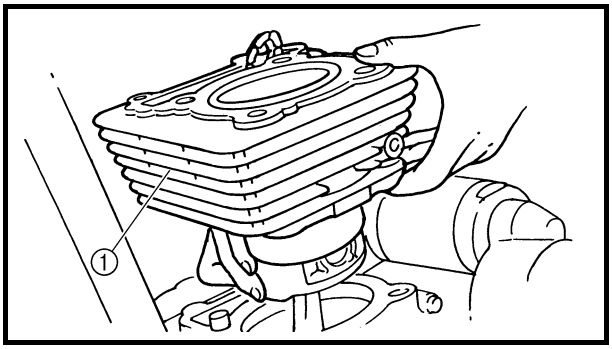
4.Position:
- Piston rings

NOTE:
Offset the piston ring end gaps as shown.

ⓐ Top ring end
ⓑ Oil ring end (lower)
ⓒ Oil ring end (upper)
ⓓ 2 nd ring end

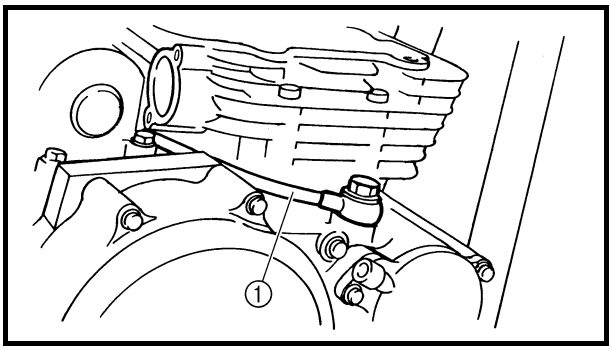
5.Lubricate:
- Piston outer surface
- Piston ring
- Cylinder inner surface

	Engine oil



6.Install:
- Cylinder ①

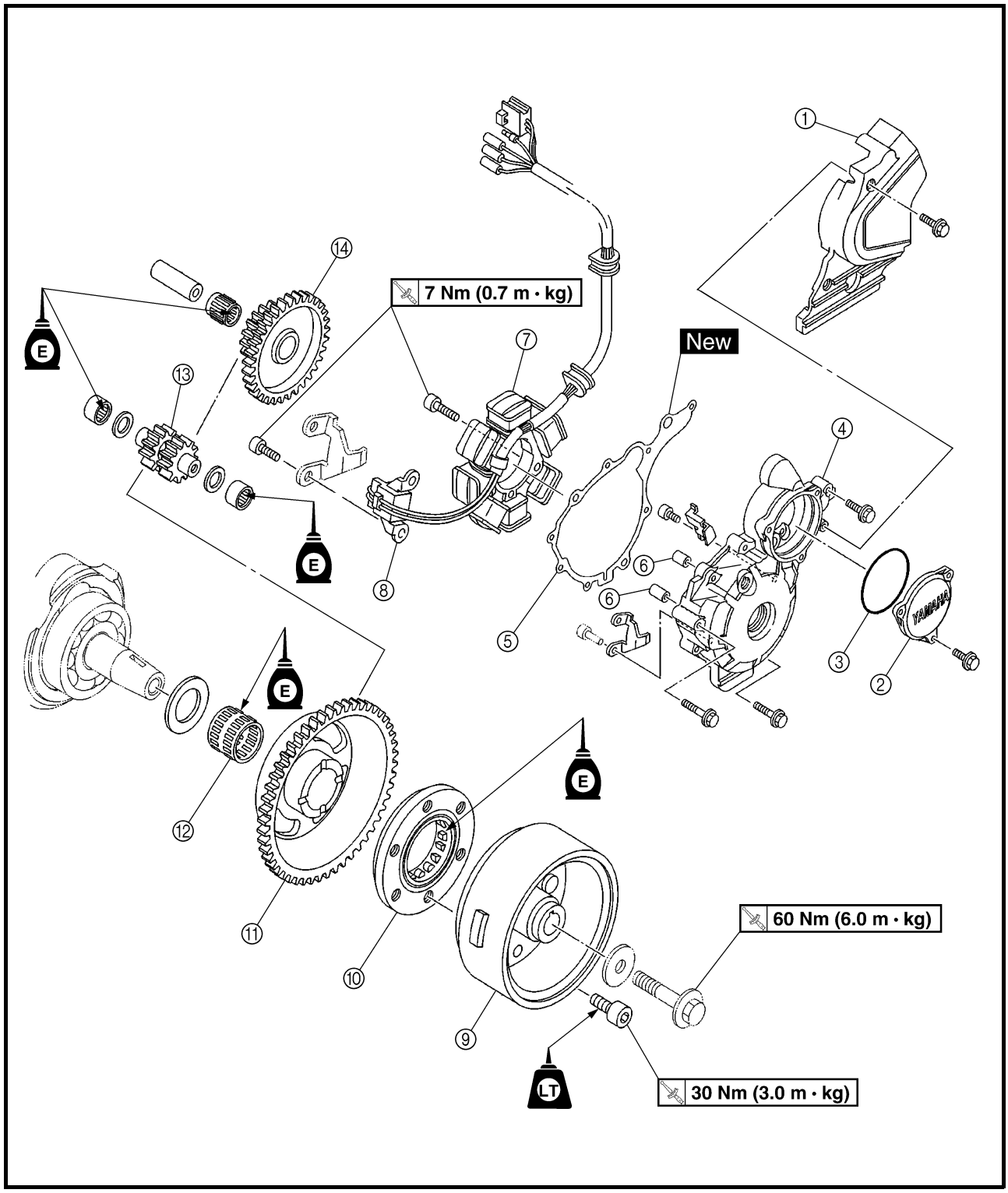
NOTE:
- Install the cylinder with one hand while compressing the piston rings with the other hand.
- Pass the timing chain and timing chain guide (exhaust side) through the timing chain cavity.



7.Install:
- Oil delivery pipe ①

GENERATOR

① Drive sprocket cover
② Cover
③ O-ring
④ Crankcase cover (left)
⑤ Gasket
⑥ Dowel pin
⑦ Stator assembly
⑧ Pickup coil
⑨ Generator rotor
⑩ Starter clutch
⑪ Starter clutch gear
⑫ Bearing
⑬ Starter clutch idle gear #2
⑭ Starter clutch idle gear #1



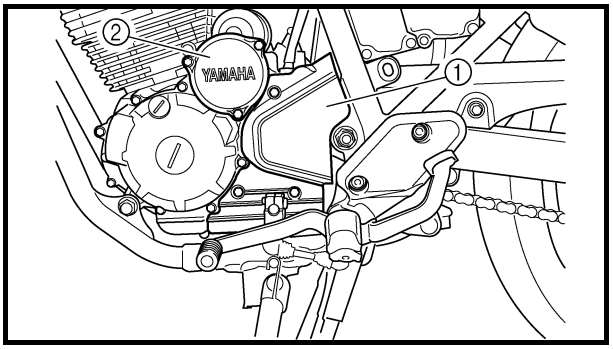
CRANKCASE COVER (LEFT) REMOVAL

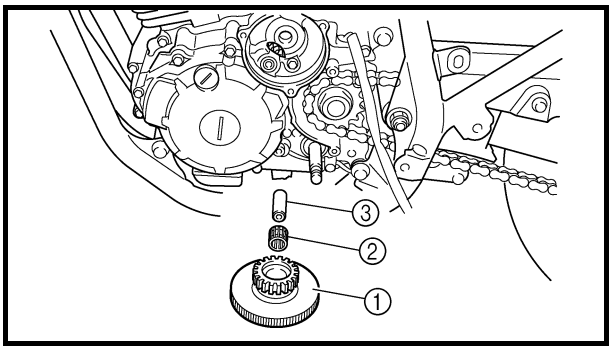
NOTE:
Prior to remove the crankcase cover (left), remove the shift pedal and drain the engine oil.

1.Remove:
- Fuel tank
  Refer to the “FUEL TANK” section in CHAPTER 3.

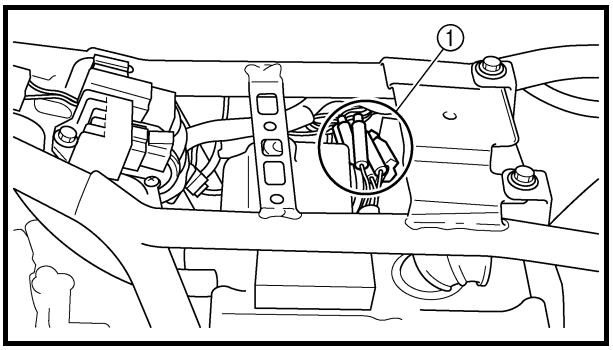
2.Remove:
- Left footrest bracket
  Refer to the “LEFT FOOTREST BRACKET” section.

3.Remove:
- Drive sprocket cover ①
- Cover ②





4.Remove:
- Starter idle gear #1 ①
- Bearing ②
- Shaft ③

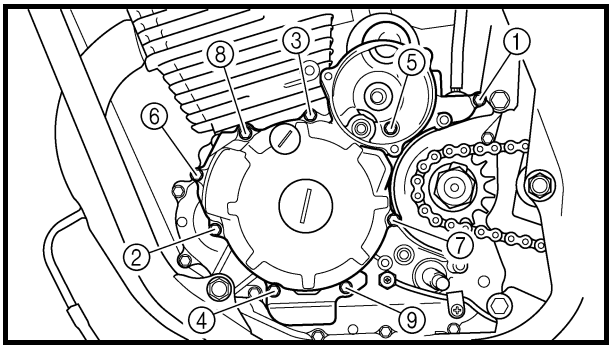


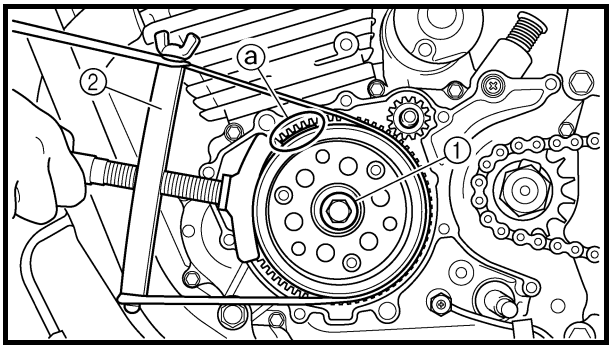
5.Remove:
- Neutral switch leads ①
- Crankcase cover (left)

NOTE:
Working in a crisscross, loosen the bolts 1/4 turn each. Remove them after all are loosened.

M6 × 40 mm bolts: ① ~ ⑥
M6 × 30 mm bolts: ⑦ ~ ⑨

6.Remove:
- Gasket
- Dowel pin

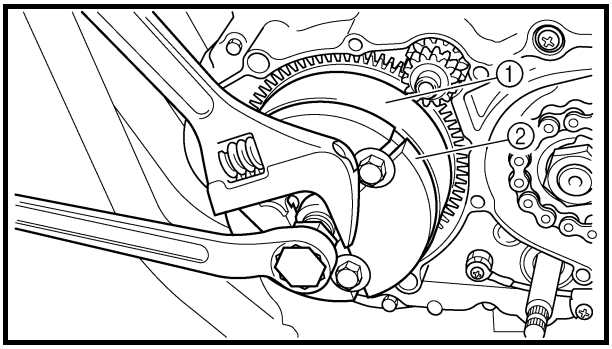




GENERATOR ROTOR REMOVAL

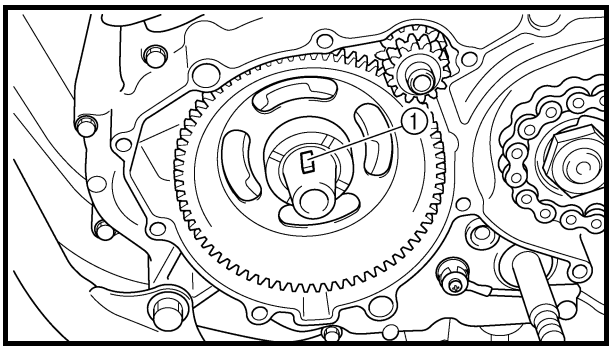
1.Remove:
- Bolt ①

NOTE:
- Do not touch the projection ⓐ when installing the sheave holder.
- Loosen the nut while holding the generator rotor with sheave holder ②.

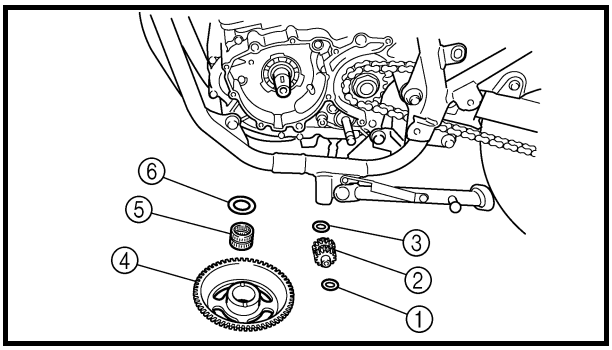


2.Remove:
- Generator rotor ①
  Use a flywheel puller ②

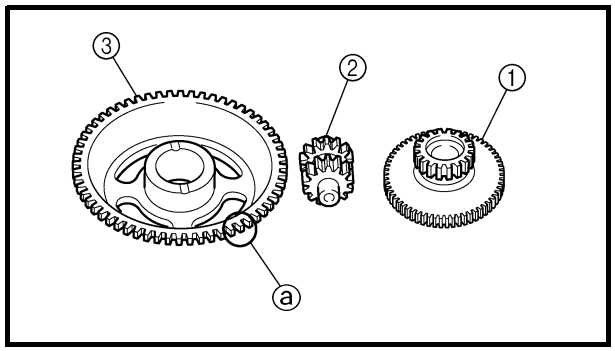
Sheave holder:
90890-01701
Flywheel puller:
90890-01362



3.Remove
- Woodruff key ①



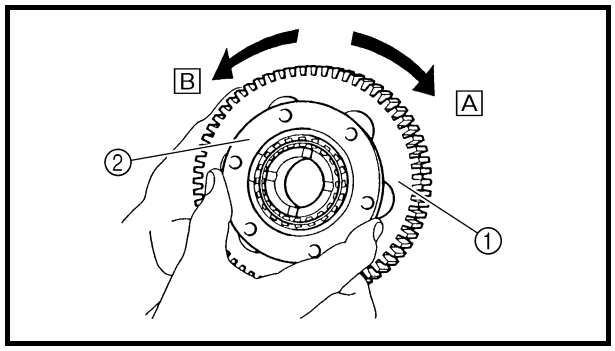
4.Remove:
- Washer ①
- Starter clutch idle gear #2 ②
- Washer ③
- Starter clutch gear ④
- Bearing ⑤
- Washer ⑥



EAS00351
STARTER CLUTCH INSPECTION

1.Check:
- Starter clutch idle gear #1 ①
- Starter clutch idle gear #2 ②
- Starter clutch gear ③
  Burrs/chips/roughness/wear → Replace the defective part(-s).

2.Check:
- Starter clutch gear's contacting surfaces ⓐ
  Damage/pitting/wear → Replace the starter clutch gear.



3.Check:
- Starter clutch operation

****

a. Install the starter clutch gear ① onto the starter clutch ② and hold the starter clutch.

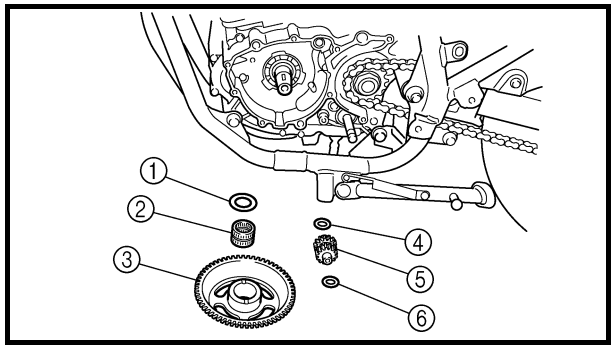
b. When turning the starter clutch gear clockwise A, the starter clutch and the starter clutch gear should engage.

   If the starter clutch gear and starter clutch do not engage, the starter clutch is faulty and must be replaced.

c. When turning the starter clutch gear counterclockwise B, it should turn freely.

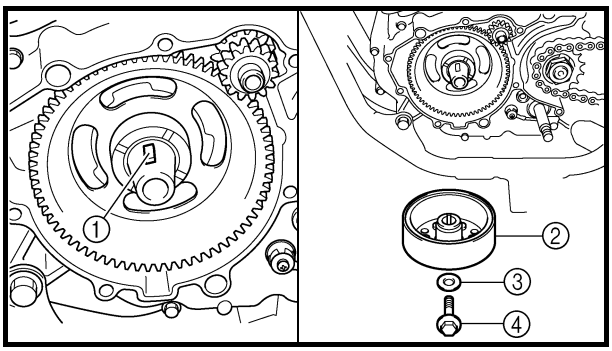
   If the starter clutch gear does not turn freely, the starter clutch is faulty and must be replaced.

****



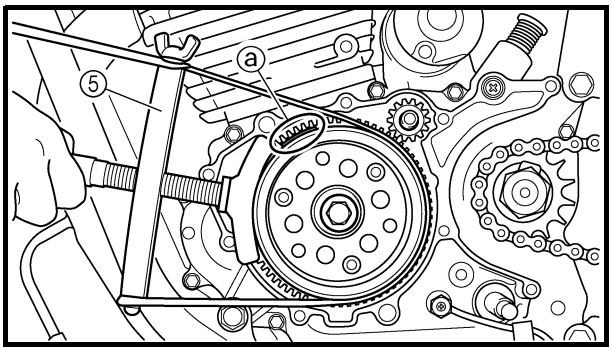
GENERATOR INSTALLATION

1.Install
- Washer ①
- Bearing ②
- Starter clutch gear ③
- Washer ④
- Starter clutch idle gear #2 ⑤
- Washer ⑥



2.Install:
- Woodruff key ①
- Generator rotor ②
- Washer ③
- Bolt ④
  Use the sheave holder ⑤

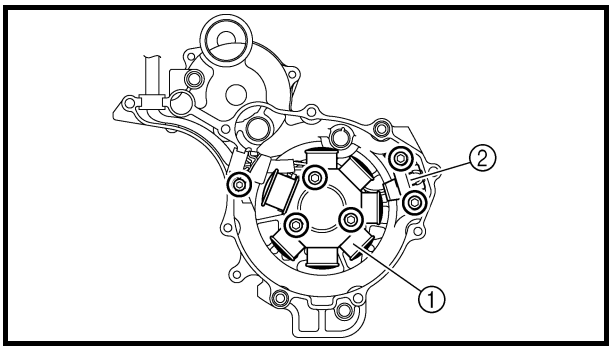
	Sheave holder: **90890-01701**



NOTE:
- Before installing the generator rotor, clean the outside of the crankshaft and inside of the generator rotor.
- When installing the generator rotor, make sure the woodruff key is properly seated in the key way of the crankshaft.

NOTE:
Do not allow the special tool to touch the projection ⓐ on the generator rotor.

	Nut (rotor): **60 Nm (6.0 m • kg)**

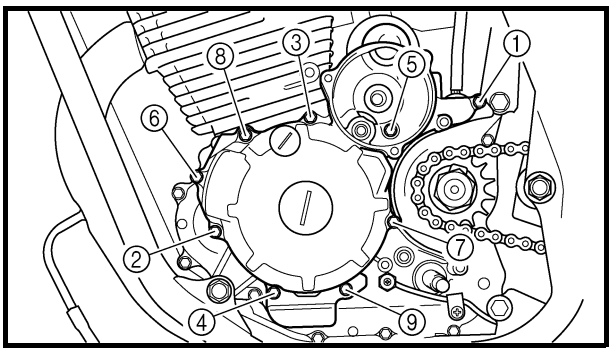


CRANKCASE COVER (LEFT)
INSTALLATION

1.Install:
- Stator coil ①
- Pickup coil ②

	Bolts (starter coil): **7 Nm (0.7 m • kg)** **Screws (pickup coil):** **7 Nm (0.7 m • kg)**

2.Install:
- Dowel pin
- Gasket New

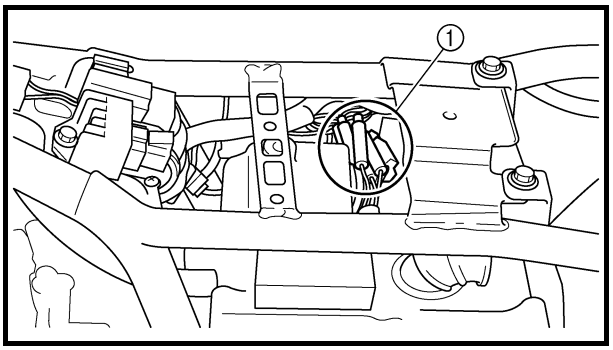


3.Install:
- Crankcase cover (left)

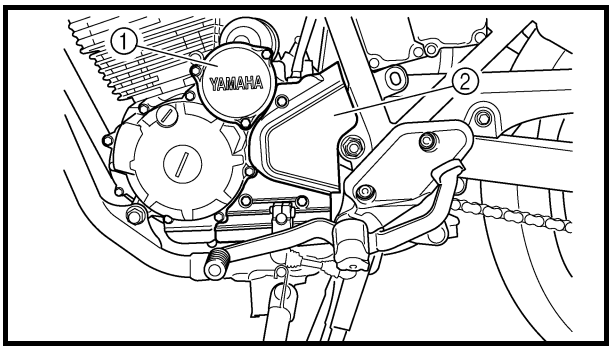
NOTE:
Tighten the bolts (crankcase cover-left) in a crisscross pattern.

M6 × 40 mm bolts: ① ~ ⑥
M6 × 30 mm bolts: ⑦ ~ ⑨

	Bolts (crankcase cover-left): 7 Nm (0.7 m • kg)



4.Install:
- Neutral switch lead ①



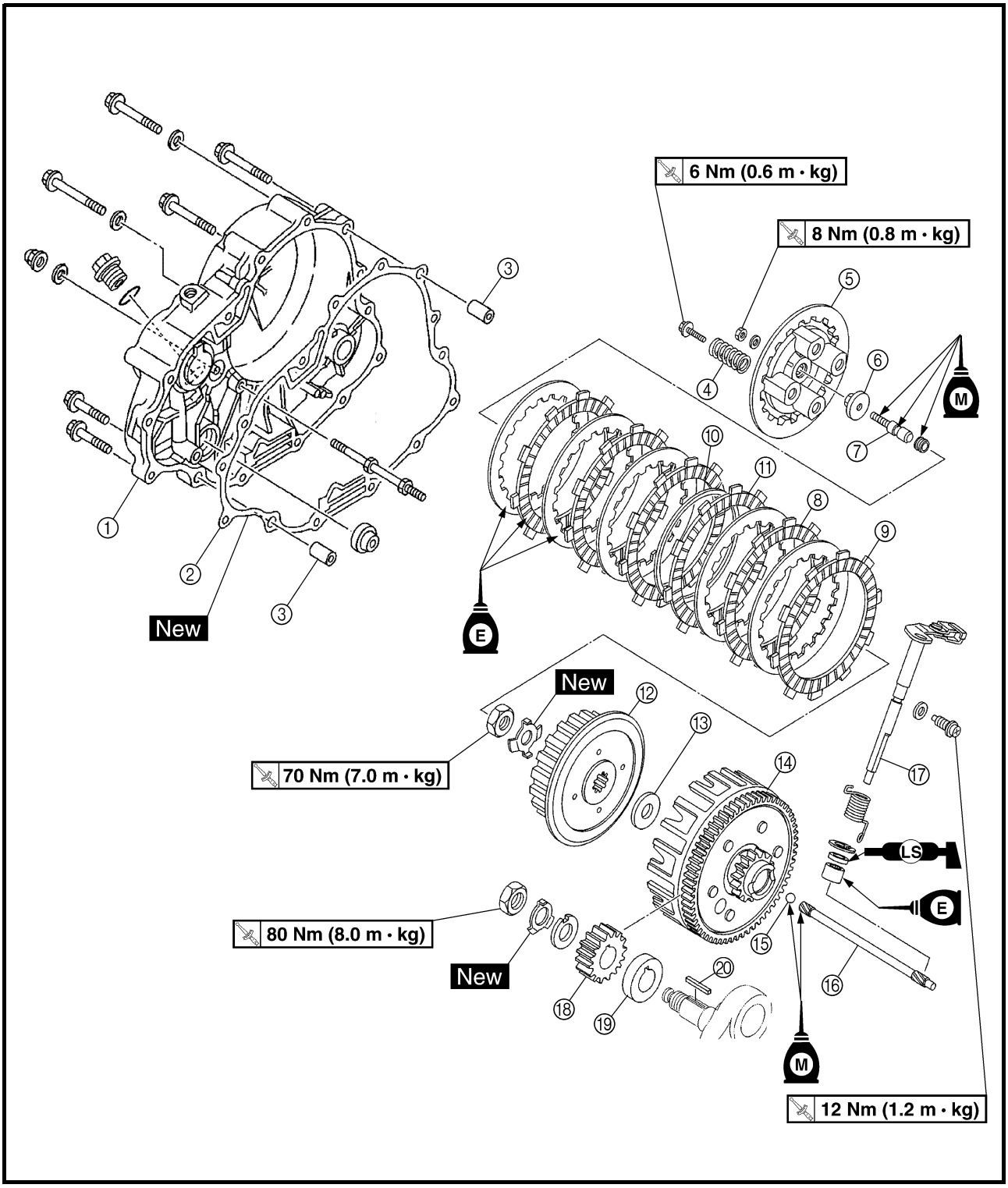
5.Install:
- Starter clutch idle gear #1
- Cover ①
- Drive sprocket cover ②

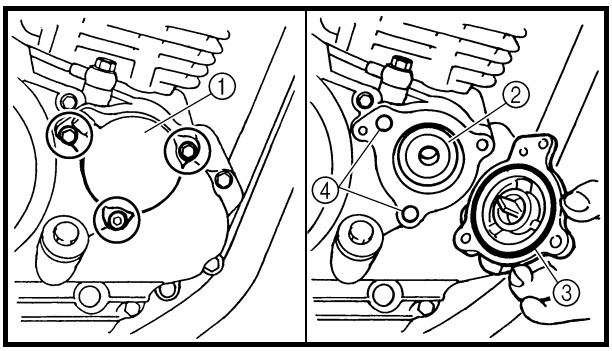
6.Install:
- Left footrest bracket
  Refer to the “LEFT FOOTREST BRACKET” section.

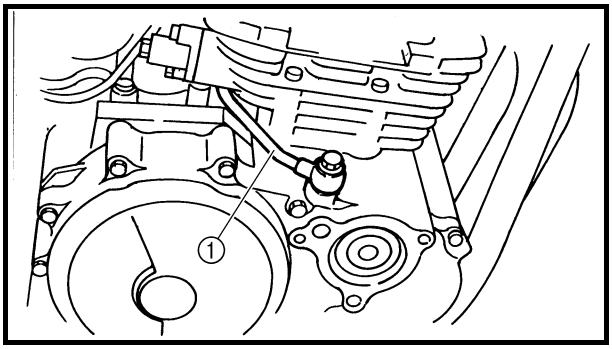
7.Install:
- Fuel tank
  Refer to the “FUEL TANK” section in CHAPTER 3.

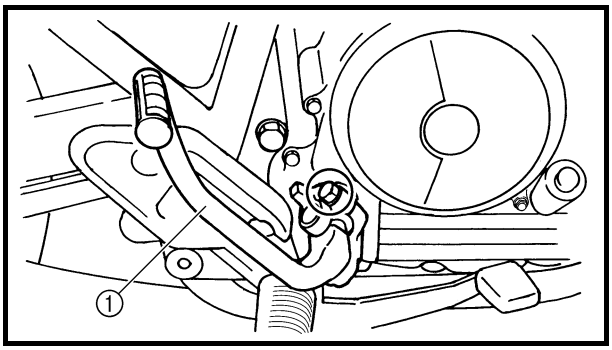
CLUTCH

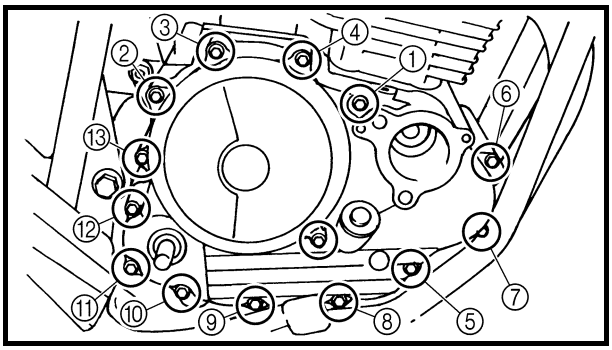
① Crankcase cover (right)
② Gasket
③ Dowel pin
④ Compression spring
⑤ Pressure plate
⑥ Push plate
⑦ Push rod #1
⑧ Clutch plate
⑨ Friction plate (#1)
⑩ Cushion spring
⑪ Friction plate (#2)
⑫ Clutch boss
⑬ Thrust washer
⑭ Clutch housing
⑮ Ball
⑯ Push rod #2
⑰ Push lever assembly
⑱ Primary drive gear
⑲ Collar
⑳ Straight key











CRANKCASE COVER (RIGHT) REMOVAL

NOTE:
Prior to remove the crankcase cover (right), drain the engine oil.

1.Remove:
- Oil filter cover ①
- Oil filter ②
- O-ring ③ (filter cover)
- O-ring ④

2.Remove:
- Oil delivery pipe ①

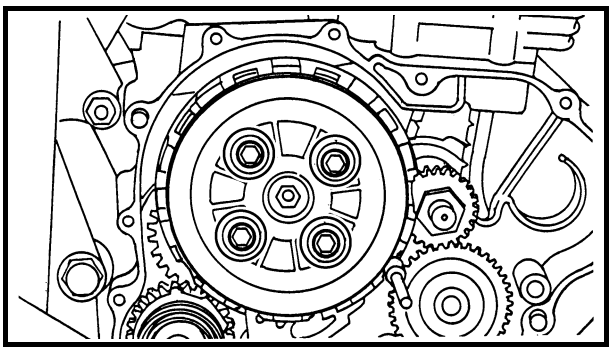
3.Remove:
- Kick starter ①

4.Remove:
- Crankcase cover (right)

NOTE:
- Working in a crisscross pattern, loosen screw 1/4 turn each. Remove them after all are loosened.
- Be sure not to give damages to the mating surface.

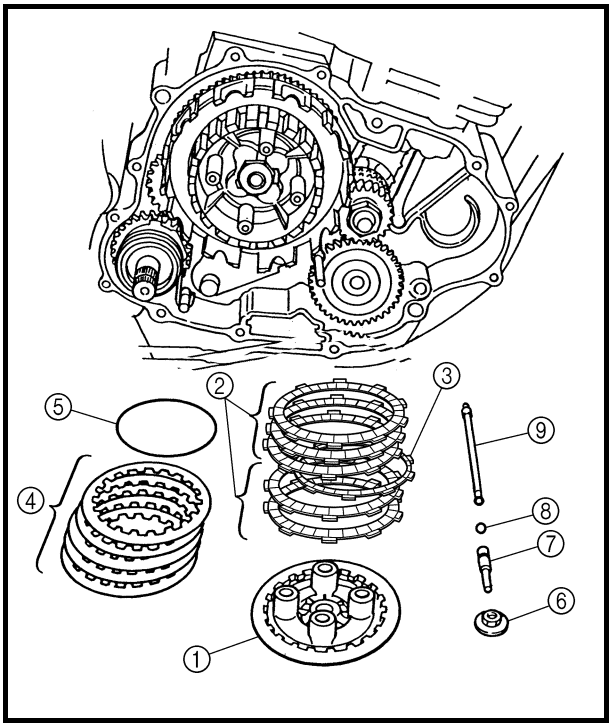
M6 × 55 mm bolt: ①
M6 × 50 mm bolts: ② ~ ④
M6 × 35 mm bolt: ⑤
M6 × 25 mm bolts: ⑥ ~ ⑬

5.Remove:
- Gasket
- Dowel pin



CLUTCH REMOVAL

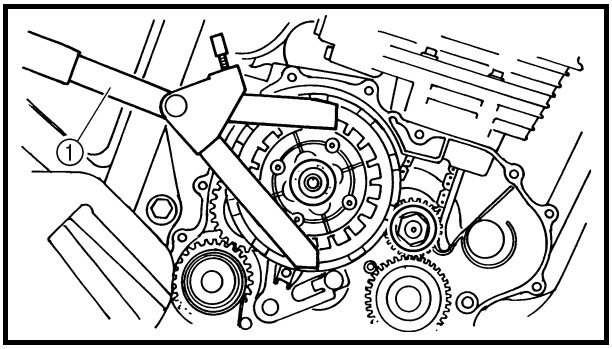
1.Remove:
- Bolts (clutch springs)
- Clutch springs



2.Remove:
- Pressure plate ①
- Friction plate (#1) ② (5 pcs)
- Friction plate (#2) ③ (1 pcs)
- Clutch plate ④ (5 pcs)
- Cushion spring ⑤
- Push plate ⑥
- Push rod (#1) ⑦
- Ball ⑧
- Push rod (#2) ⑨

3.Straighten:
- Lock washer tab.

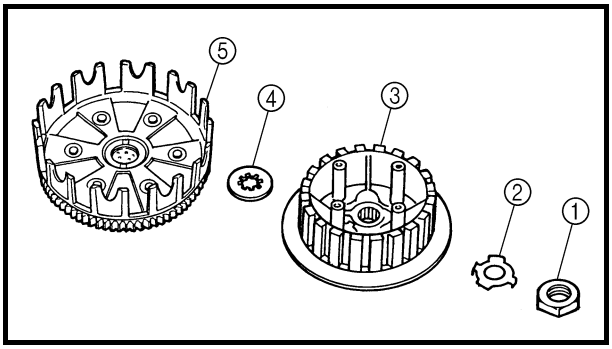
NOTE:
Slide the right side of crankcase to remove ball and push rod (#1).



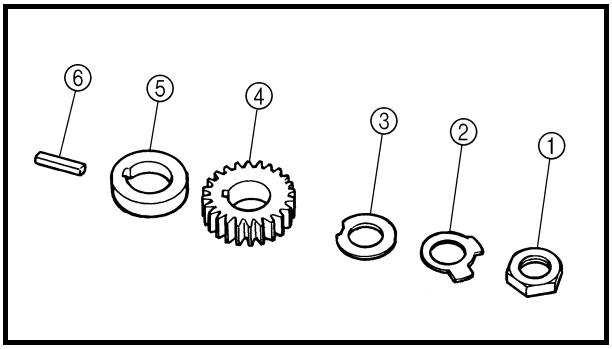
4.Loosen:
- Nut (clutch boss)
- Nut (primary drive gear)

NOTE:
Loosen the nut (clutch boss) while holding the clutch boss with universal clutch holder ①.

	Universal clutch holder: 90890-04086



5.Remove:
- Nut ① (clutch boss)
- Lock washer ②
- Clutch boss ③
- Thrust washer ④
- Clutch housing ⑤



6.Remove:
- Nut ① (primary drive gear)
- Lock washer ②
- Crow washer ③
- Primary drive gear ④
- Collar ⑤
- Straight key ⑥

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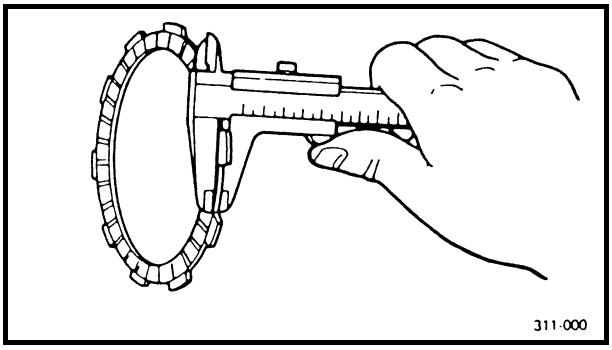
CLUTCH INSPECTION

1.Inspect:
- Friction plate (#1, #2)
  Damage/wear → Replace the friction plates as a set.

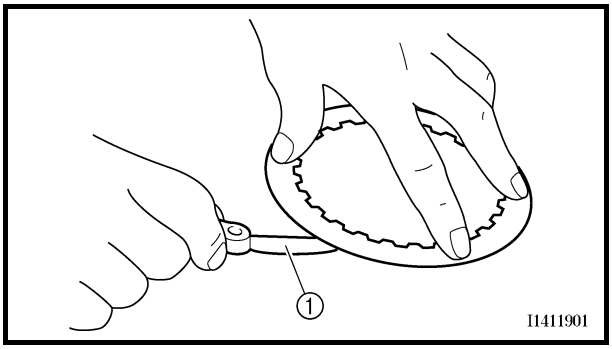
2.Measure:
- Friction plate thickness
  Out of specification → Replace the friction plates as a set.
  Measure at four places.

Thickness (friction plate #1, #2):
2.9 ~ 3.1 mm
<Limit: 2.8 mm>



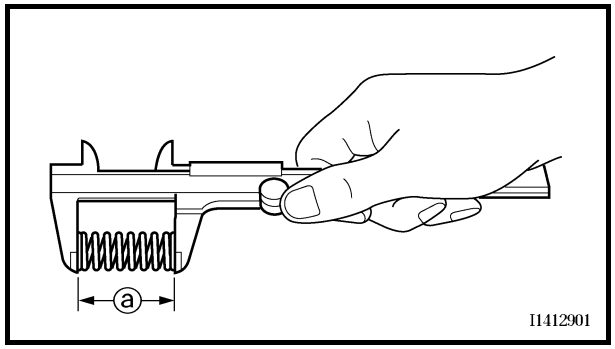
3.Inspect:
- Clutch plates
  Damage → Replace the clutch plates as a set.

4.Measure:
- Clutch plate warpage
  Out of specification → Replace the clutch plates as a set.
  Use a surface plate and a feeler gauge ①.



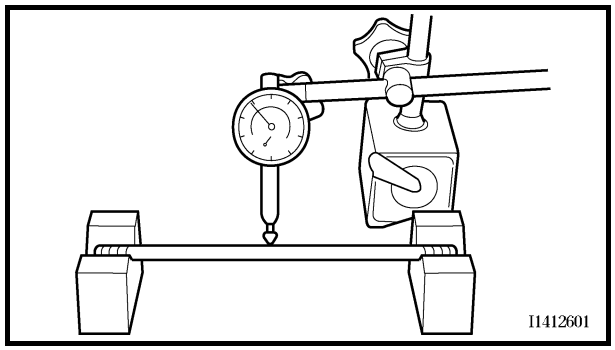
Warp; limit (clutch plate):
Less than 0.2 mm

5.Inspect:
- Compression springs
  Damage → Replace the compression springs as a set.



6.Measure:
- Free length (compression spring) ⓐ
  Out of specification → Replace the clutch springs as a set.

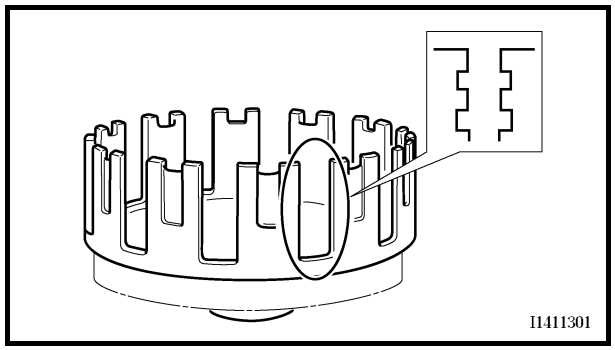
Free length (clutch spring):
34.9 mm
<Limit: 33.2 mm>



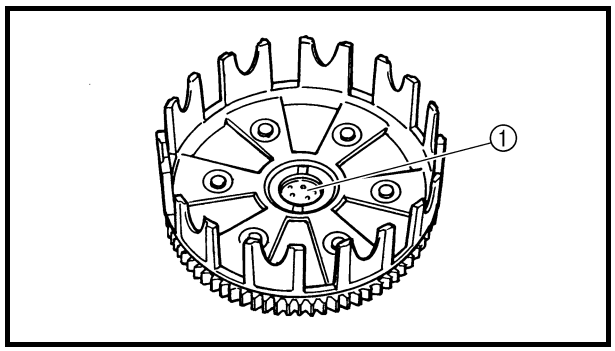
7.Inspect:
- Push rod (#2)
  Wear/crack/damage → Replace.

8.Measure:
- Push rod (#2)
  Out of specification → Replace.

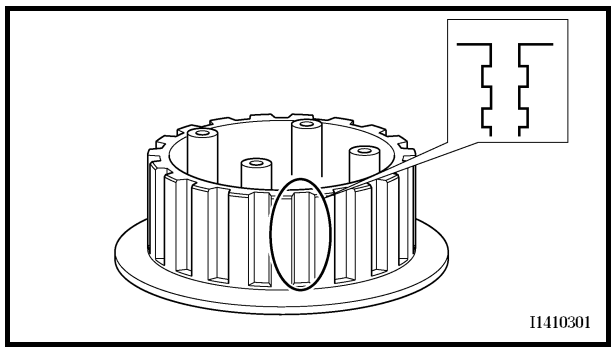
Bending limit (push rod #2):
0.5 mm



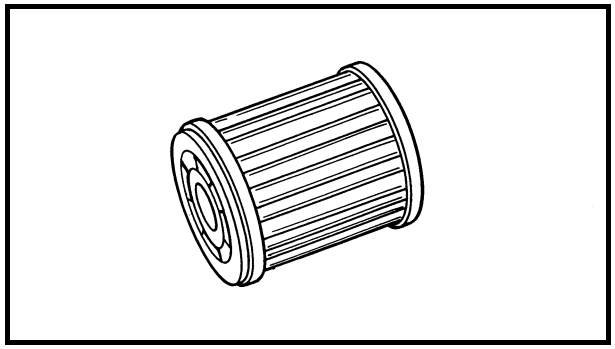
9.Inspect:
- Dogs on the housing
  Cracks/wear/damage → Deburr or replace.



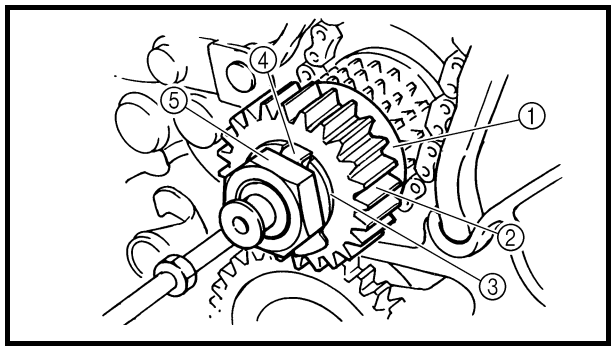
10.Inspect:
- Clutch housing bearing ①
  Cracks/wear/damage → Replace.



11.Inspect:
- Clutch boss splines
  Scoring/wear/damage → Replace clutch boss assembly.



12.Inspect:
- Oil filter
  Cracks/damage → Replace.
  Contamination → Clean the flushing oil.



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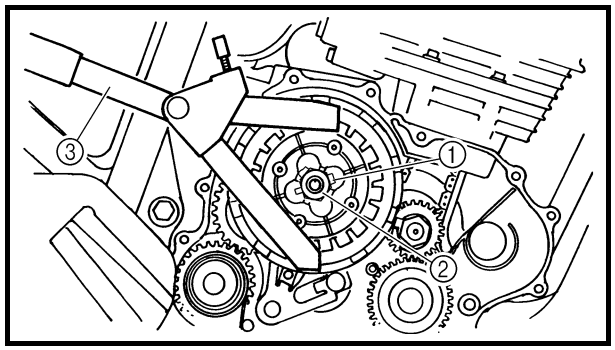
CLUTCH INSTALLATION

1.Install:
- Straight key
- Collar ①
- Primary drive gear ②
- Crow washer ③
- Lock washer ④ New
- Nut (primary drive gear) ⑤

80 Nm (8.0 m • kg)

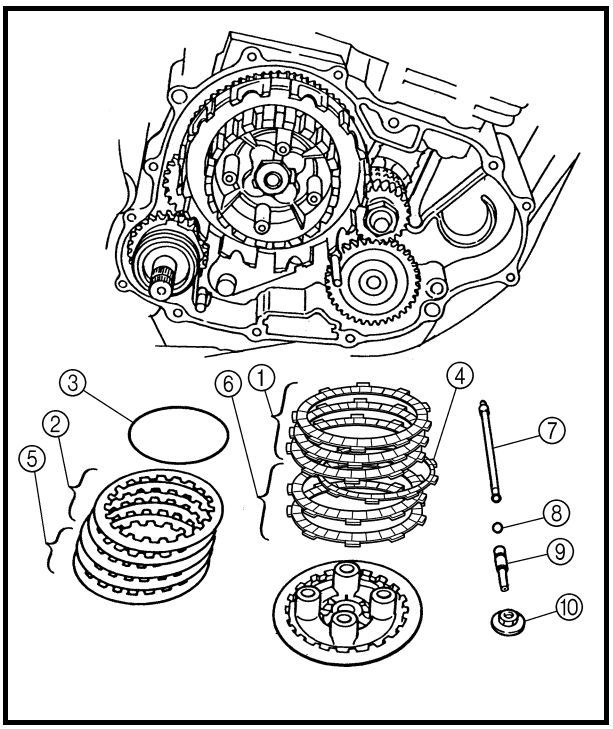


2.Install:
- Clutch housing
- Thrust washer
- Clutch bass
- Lock washer ① New
- Nut ② (clutch boss) **70 Nm (7.0 m • kg)**

NOTE:
Install the primary drive gear and clutch boss nut ② while holding the clutch boss with a clutch holding tool ③.

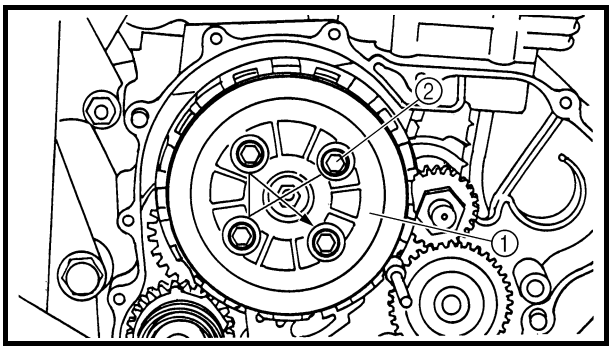
Universal clutch holder: 90890-04086

3.Bend:
- Lock washer tab ① (primary drive gear and clutch boss)
  (along a flat side of the end)



4.Install:
- Friction plate (#1) ① (3 pcs)
- Clutch plate ② (3 pcs)
- Cushion spring ③
- Friction plate (#2) ④
- Clutch plate ⑤ (2 pcs)
- Friction plate (#1) ⑥ (2 pcs)
- Push rod (#2) ⑦
- Ball ⑧
- Push rod (#1) ⑨
- Push plate ⑩

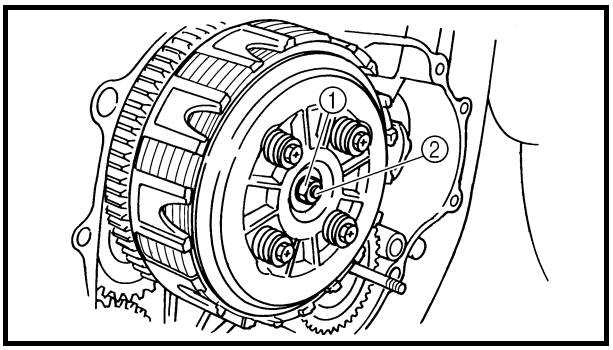
NOTE:
Install the clutch plates and friction plates alternately on the clutch boss, starting with a friction plate and ending with a friction plate.



5.Install:
- Pressure plate ①
- Compression springs
- Bolts ② (compression springs)

	6 Nm (0.6 m • kg)

NOTE:
Tighten the bolts in a crisscross pattern.



6.Adjust:
- Clutch mechanism free play

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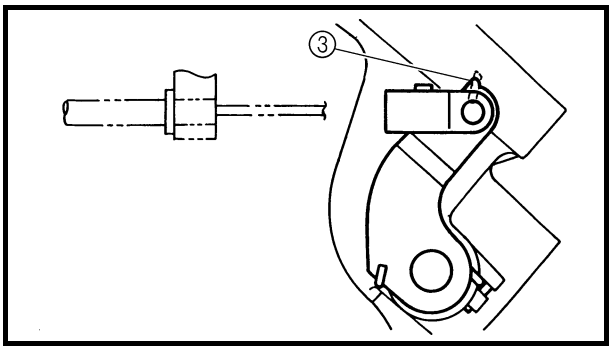
Clutch mechanism free play adjustment steps:
- Loosen the locknut ①
- Push the push lever toward the front of the engine with your finger to align the push lever tab with the alignment mark on the crankcase.
- With the push lever in this position, turn the screw ② either in or out until the push lever mark ③ and crankcase match mark are aligned.
- Tighten the locknut.



	Locknut: **8 Nm (0.8 m • kg)**

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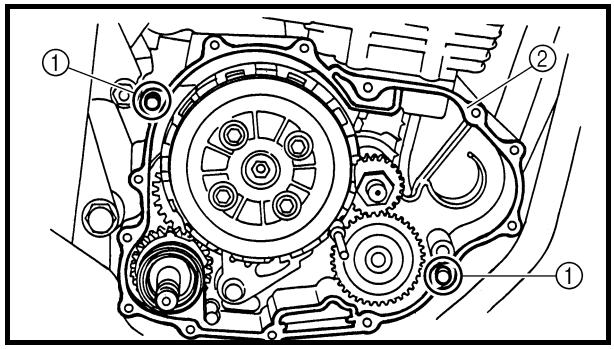
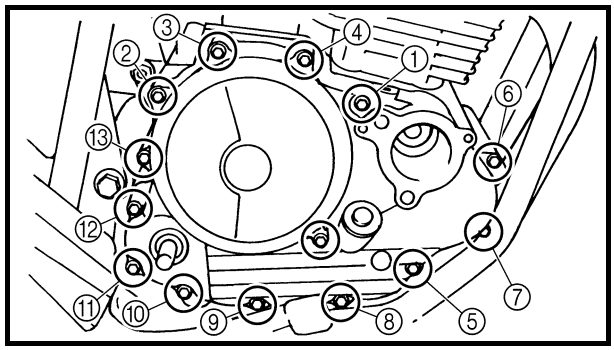
7.Tighten
- Screw (push lever axle)

	Screw: 12 Nm (1.2 m • kg)



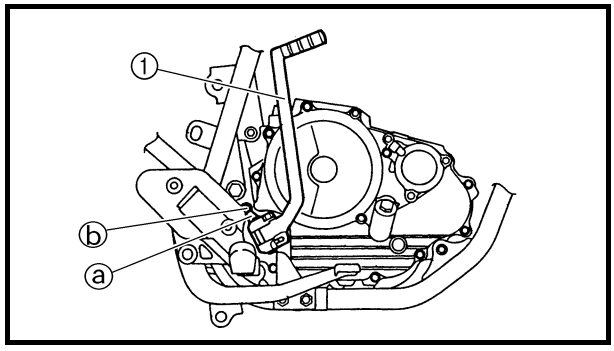
8.Install:
- Dowel pins ①
- Gasket ② New



9.Install:
- Crankcase cover (right)

	Bolts (crankcase cover-right): 10 Nm (1.0 m • kg)

M6 × 55 mm bolt: ①
M6 × 50 mm bolts: ② ~ ④
M6 × 35 mm bolt: ⑤
M6 × 25 mm bolts: ⑥ ~ ⑬

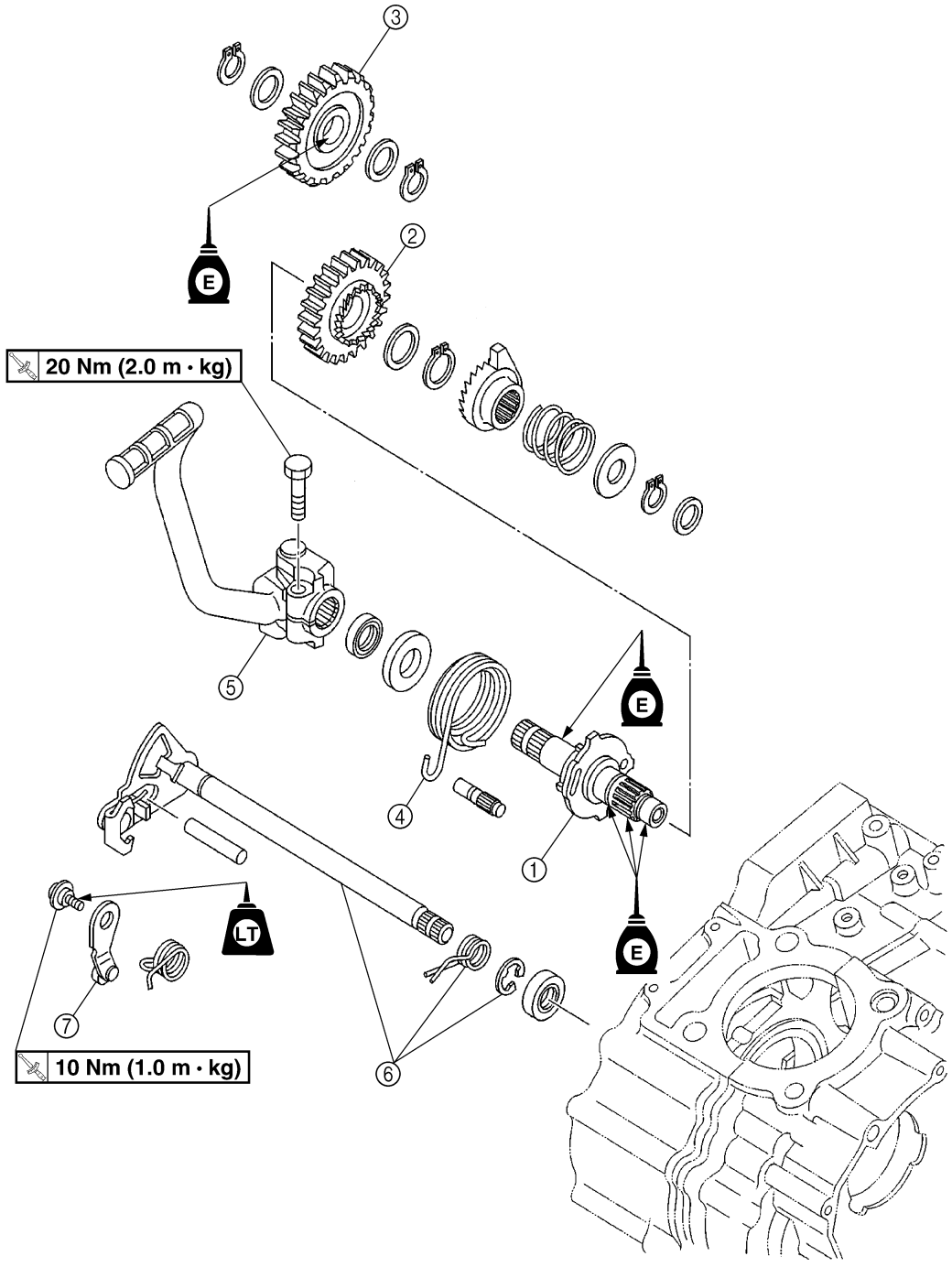


10.Install:
- Kick crank ①

NOTE:
Align the lip ⓐ of kick crank boss with the bolt ⓑ as shown.

KICK STARTER AND SHIFT SHAFT

① Kick shaft
② Kick segment gear
③ Kick pinion gear
④ Kick spring
⑤ Kick crank
⑥ Shift shaft assembly
⑦ Stopper lever

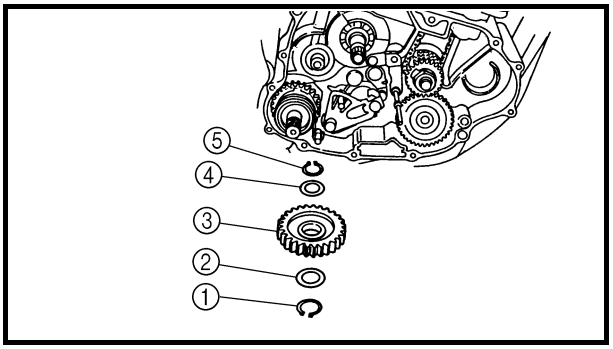


KICK SHAFT AND SHIFT SHAFT REMOVAL

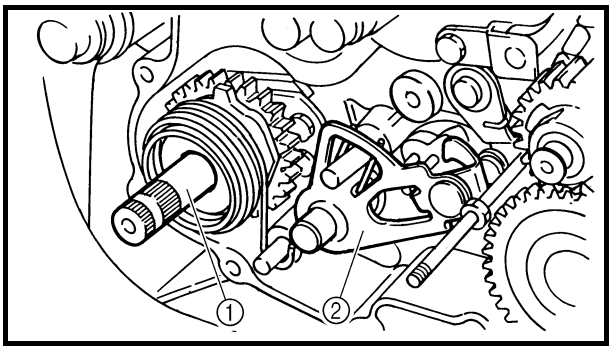
NOTE:
Prior to remove the kick shaft, remove the clutch assembly.

1.Remove:
- Clutch housing
  Refer to the “CLUTCH REMOVAL” section.

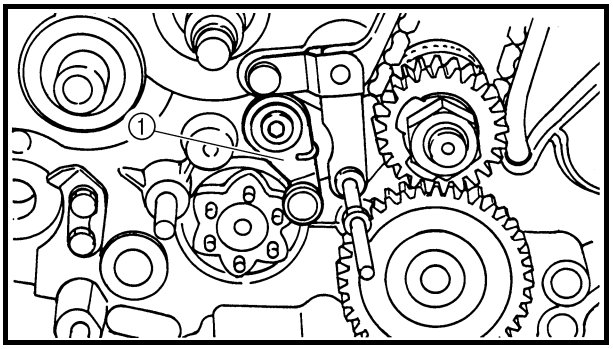
2.Remove:
- Shift pedal
  Refer to the “LEFT FOOTREST BRACKET” section.



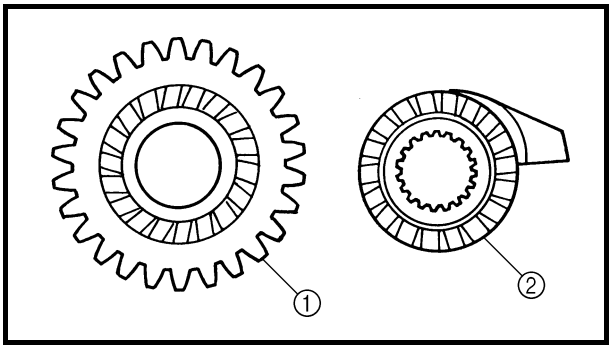
3.Remove:
- Circlip ①
- Washer ②
- Kick pinion gear ③
- Washer ④
- Circlip ⑤



4.Remove:
- Kick shaft assembly ①
- Shift shaft assembly ②



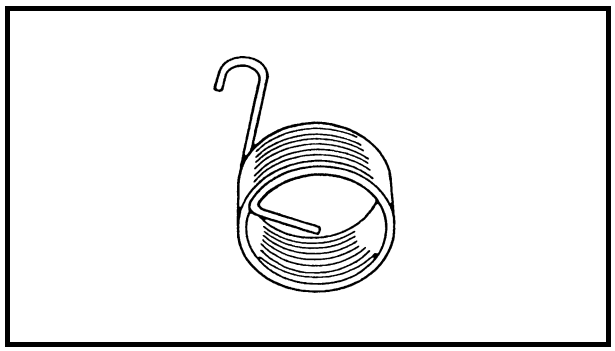
5.Remove:
- Stopper lever assembly ①



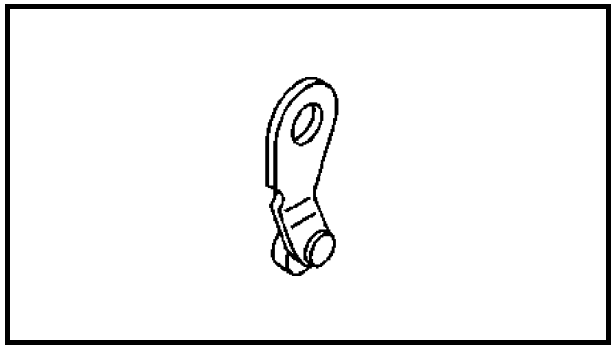
T******

KICK STARTER INSPECTION

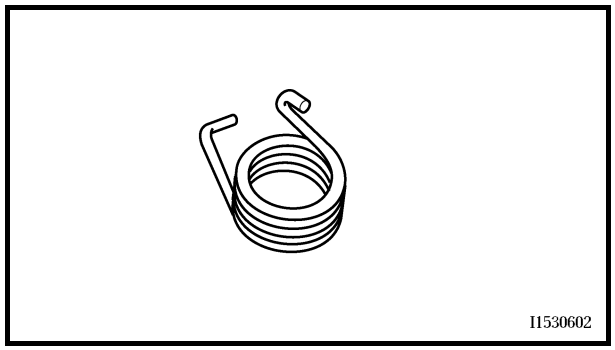
1.Inspect:
- Kick segment gear ①
- Ratchet gear teeth ②
  Wear/damage → Replace.



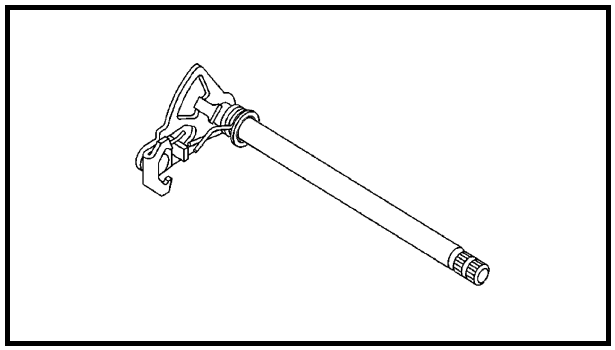
2.Inspect:
- Kick spring
  Wear/crack → Replace.



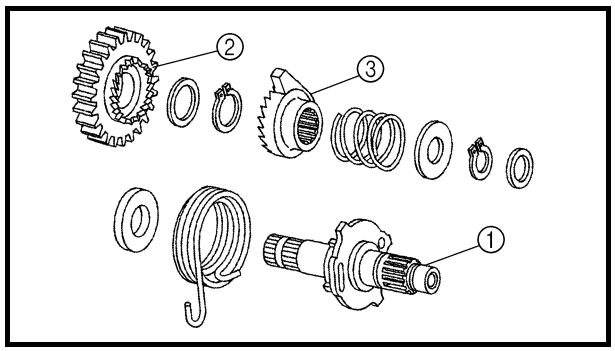
T402200
SHIFT SHAFT INSPECTION
1.Inspect:
- Stopper lever
  Roller turns roughly → Replace.
  Bends/damage → Replace.



2.Inspect:
- Stopper lever spring
  Wear/damage → Replace.



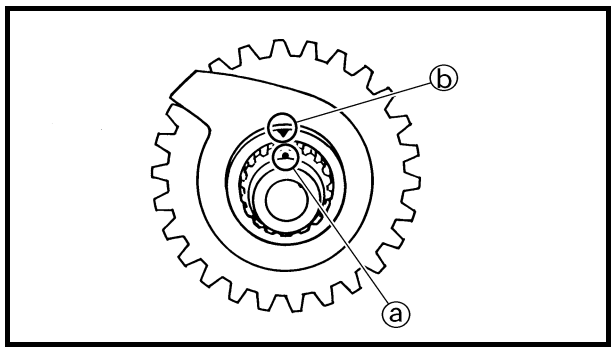
3.Inspect:
- Shift shaft assembly
- Shift shaft spring
  Bends/wear damage → Replace.



KICK SHAFT ASSEMBLING

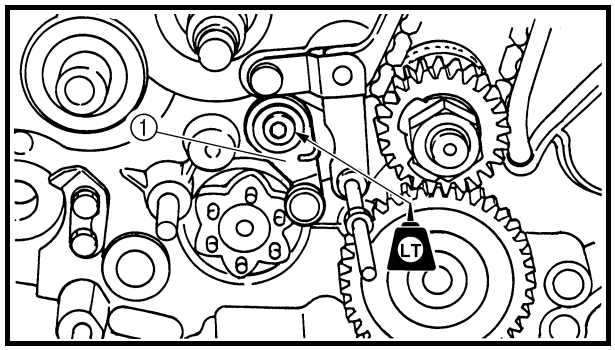
1.Install:
- Kick shaft ①
- Kick segment gear ②
- Ratchet gear ③

NOTE:
Align the punch mark of kick shaft ⓐ to the kick segment gear ⓑ.

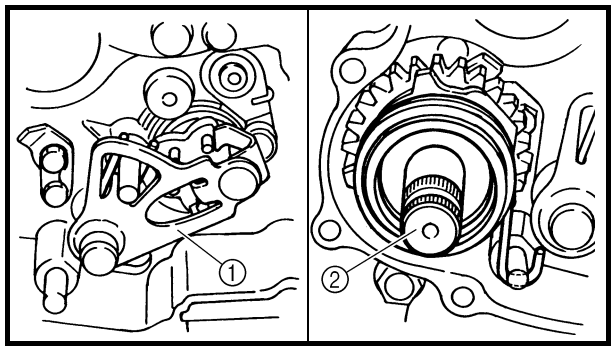


SHIFT SHAFT AND KICK STARTER INSTALLATION

1.Install:
- Stopper lever assembly ①

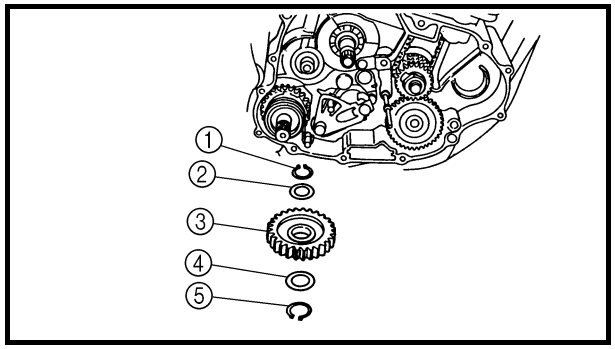


Bolt (stopper):
10 Nm (1.0 m • kg)
LOCTITE®



2.Install:
- Shift shaft assembly ①
- Kick shaft assembly ②

NOTE:
Hook the kick spring onto the crankcase stopper.

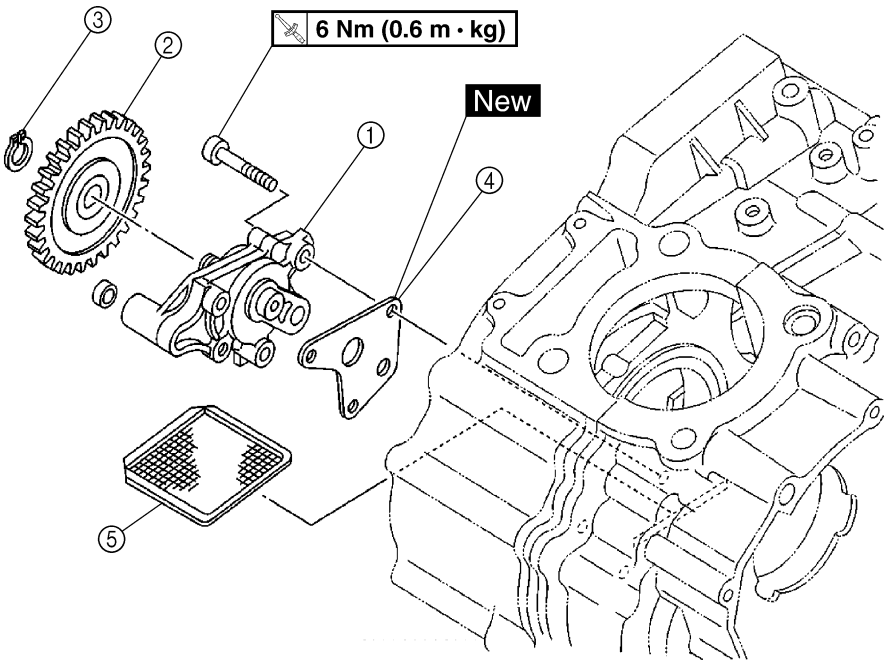


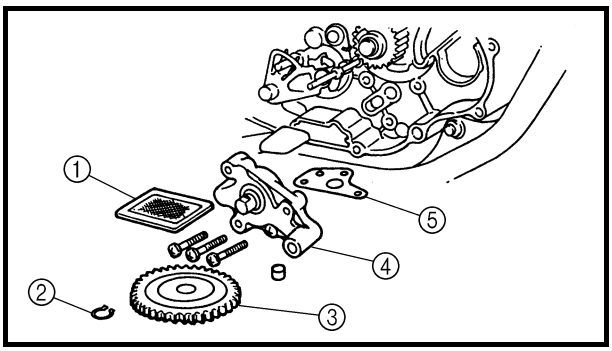
3.Install:
- Circlip ①
- Washer ②
- Kick pinion gear ③
- Washer ④
- Circlip ⑤

4.Bend:
- Lock washer

OIL PUMP

① Oil pump assembly
② Oil pump gear
③ Circlip
④ Gasket
⑤ Oil strainer



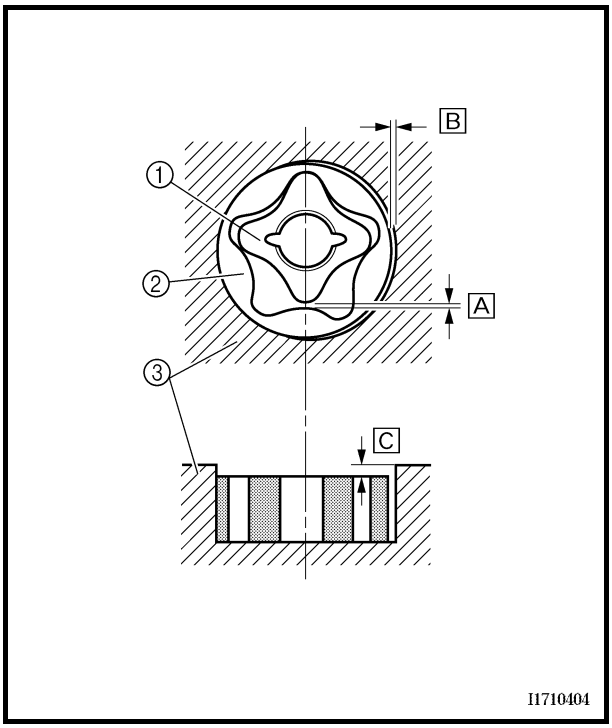


OIL PUMP REMOVAL

NOTE:
Prior to remove the oil pump, remove the clutch assembly.

1.Remove:
- Oil strainer ①
- Circlip ②
- Oil pump gear ③
- Oil pump assembly ④
- Gasket ⑤

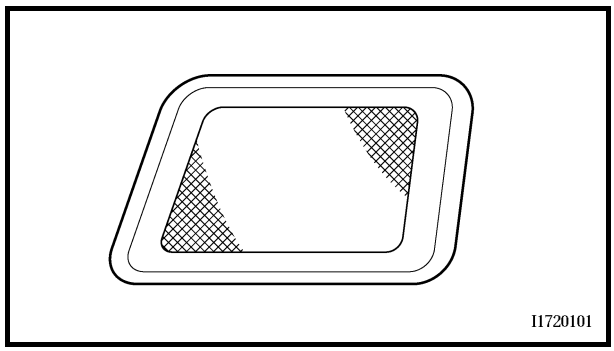
NOTE:
Do not remove the screw, to avoid disassembling oil pump.



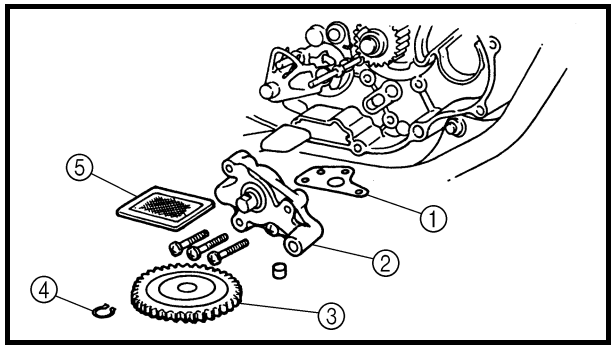
T402140
OIL PUMP INSPECTION

1.Measure:
- Tip clearance A
  (between the inner rotor ① and the outer rotor ②)
- Side clearance B
  (between the outer rotor ② and the pump housing ③)
  Out of specification → Replace the oil pump assembly.
- Housing and rotor clearance C
  (between the pump housing ③ and the rotors ① ②)
  Out of specification → Replace the oil pump assembly.

Tip clearance A:
0.15 mm <Limit: 0.20 mm>
Side clearance B
0.04 ~ 0.09 mm
<Limit: 0.15 mm>
Housing and rotor clearance C:
0.03 ~ 0.09 mm
<Limit: 0.15 mm>



2.Inspect:
- Oil stainer
  Cracks/damage → Replace.
  Contamination → Clean the flushing oil.



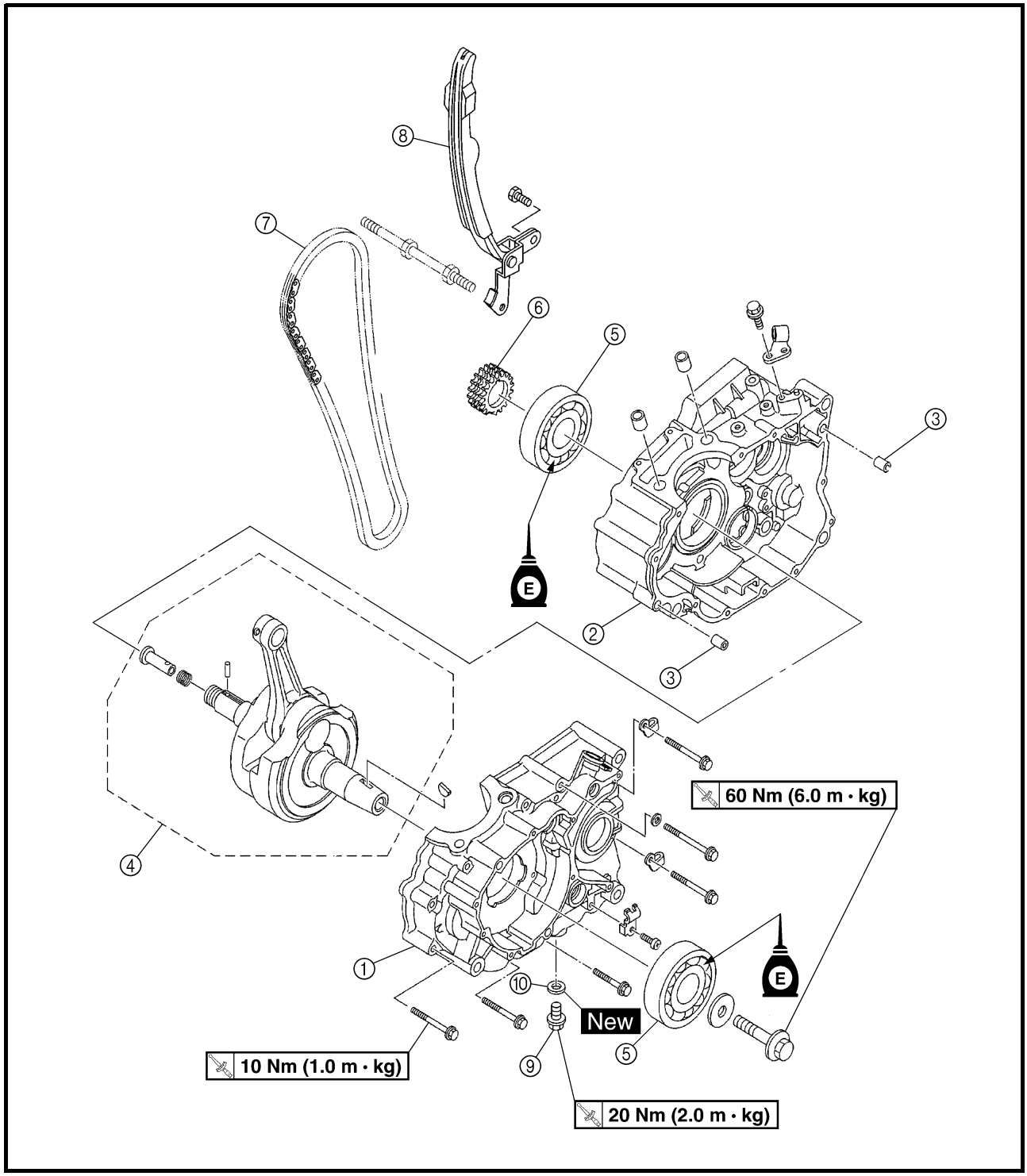
OIL PUMP INSTALLATION

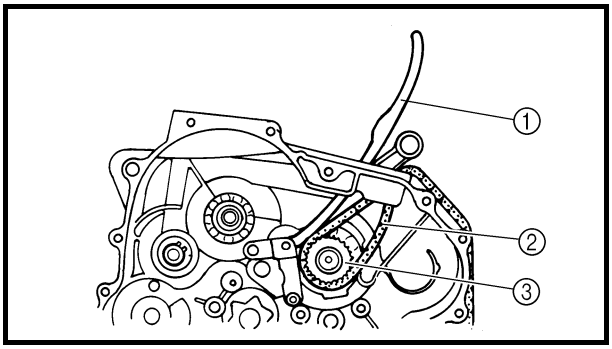
1.Install:
- Gasket ①
- Oil pump assembly ②
- Oil pump gear ③
- Circlip ④
- Oil strainer ⑤

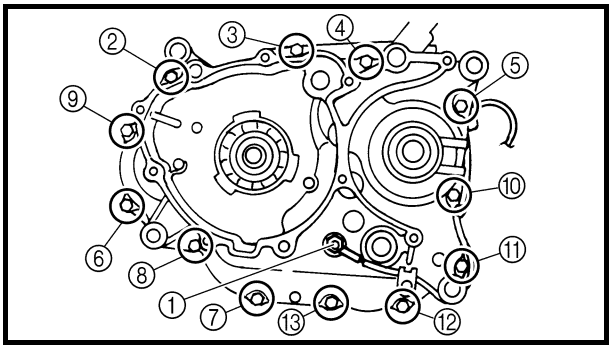
	Bolt (oil pump): **6 Nm (0.6 m • kg)**

CRANKCASE AND CRANKSHAFT

① Crankcase (left)
② Crankcase (right)
③ Dowel pin
④ Crank shaft assembly
⑤ Bearing
⑥ Timing chain drive sprocket
⑦ Timing chain
⑧ Timing chain guide (intake side)
⑨ Drain bolt
⑩ Gasket







CRANKCASE SEPARATING

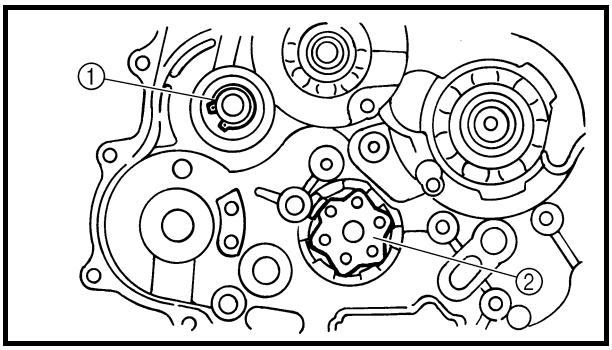
NOTE:
Prior to separate the crankcase, remove the engine and remove the cylinder head, cylinder, generator, clutch, kick axle, shift shaft and oil pump.

1.Remove:
- Timing chain ①
- Timing chain guide (intake side) ②
- Timing chain drive sprocket ③
- Push lever (clutch)

2.Remove:
- Neutral switch ①
- Crankcase bolts

NOTE:
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.

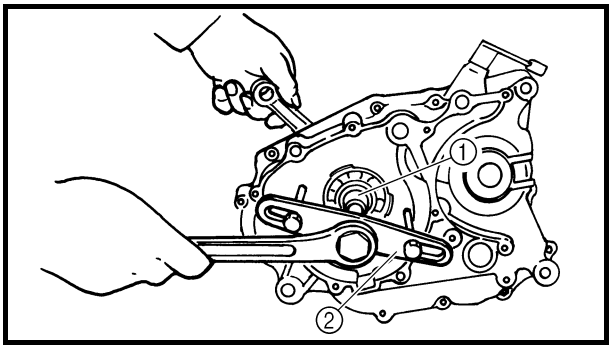
M6 × 70 mm bolts: ② ~ ④
M6 × 60 mm bolts: ⑤, ⑥
M6 × 55 mm bolts: ⑦ ~ ⑨
M6 × 45 mm bolts: ⑩ ~ ⑬



3.Remove:
- Circlip ①
- Crankcase (right)

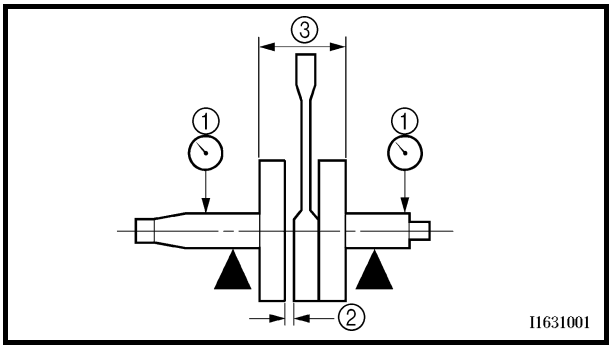
NOTE:
Align the shift drum ② projections with the slots on the right crankcase before removing right crankcase.

CAUTION:
Use soft hammer to tap on the case half, tap only on reinforced portions of case. The slot for separating the crankcase is provided. Using the screwdriver, separate the case with even force applied to both side. Do not damage the crankcase mating surface.



4.Remove:
- Crankshaft ①
  Use a crankcase separating tool ②.

	Crankcase separating tool: 90890-01135



T******
CRANKSHAFT INSPECTION

1.Measure:
- Crankshaft runout ①
  Out of specification → Replace crankshaft and/or bearing.

NOTE:
Measure the crankshaft runout with the crankshaft assembly turning slowly.

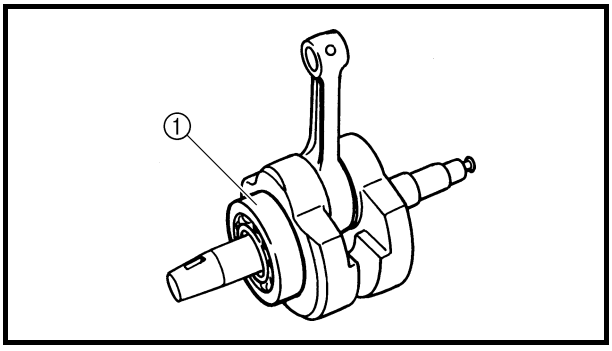
	Runout limit: 0.03 mm

2.Measure:
- Big end side clearance ②
  Out of specification → Replace big end bearing, crank pin and/or connecting rod.

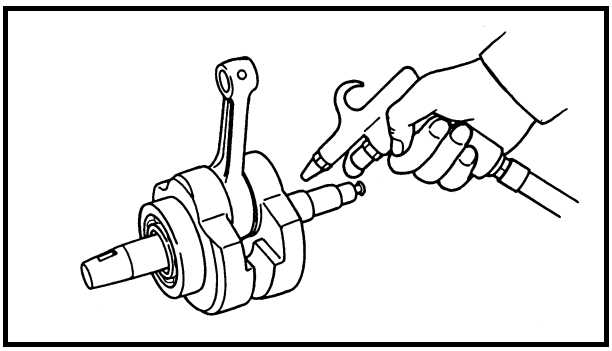
	Big end side clearance: 0.35 ~ 0.85 mm

3.Measure:
- Crank width ③
  Out of specification → Replace crankshaft.

	Crank width 69.25 ~ 69.30 mm



4.Inspect:
- Bearing ①
  Wear/crack/damage → Replace crankshaft.

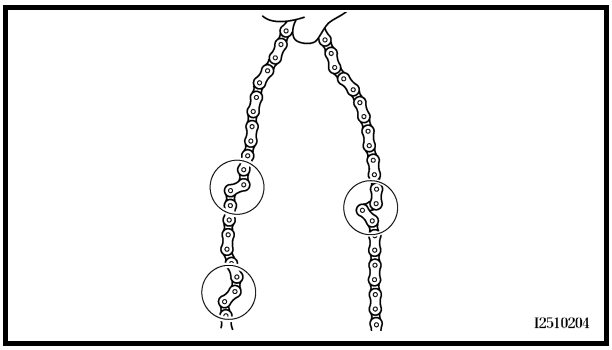


5.Inspect:
- Crankshaft journal
  Clogged → Blow out the journal with compressed air.

EAS00401
BEARINGS AND OIL SEALS INSPECTION

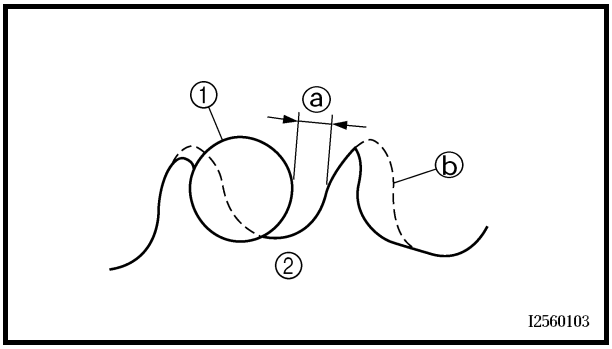
1.Check:
- Bearings
  Clean and lubricate the bearings, then rotate the inner race with your finger.
  Rough movement → Replace.

2.Check:
- Oil seals
  Damage/wear → Replace.



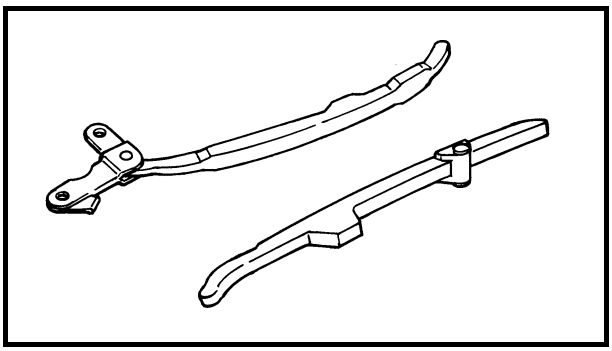
EAS00207
TIMING CHAIN, TIMING CHAIN DRIVE SPROCKET AND TIMING CHAIN GUIDES INSPECTION

1.Check:
- Timing chain
  Damage/stiffness → Replace the timing chain and camshaft sprocket as a set.



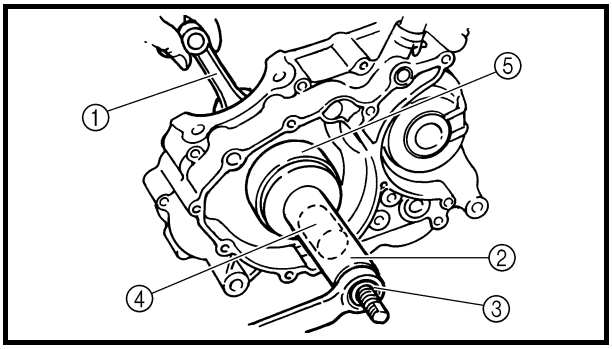
2.Check:
- Timing chain drive sprocket
  More than 1/4 tooth ⓐ wear → Replace the camshaft sprocket and the timing chain as a set.

ⓐ 1/4 tooth
ⓑ Correct
① Timing chain roller
② Timing chain drive sprocket



3.Check:
- Timing chain guide (exhaust side)
- Timing chain guide (intake side)

Damage/wear → Replace the defective part(-s).



CRANKSHAFT INSTALLATION

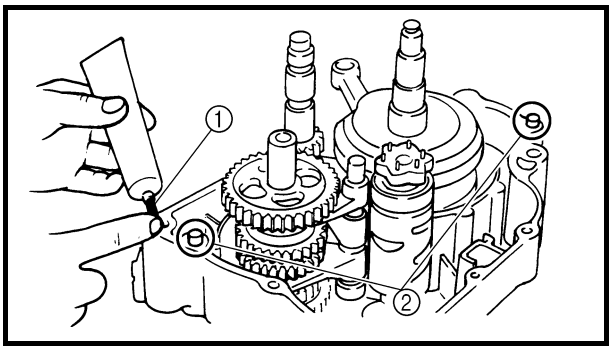
1.Install:
- Crankshaft

Into the crankcase (right)

NOTE:

Hold the connecting rod ① at top dead center with one hand while turning the nut of the installing tool with the other. Operate the installing tool unit the crankshaft bottoms against the bearing.

Crankshaft installer pot ②:
90890-01274
Crankshaft installer bolt ③:
90890-01275
Adaptor (M10) ④:
90890-01383
spacer ⑤:
90890-01288



CRANKCASE ASSEMBLING

1.Apply:
- Sealant

To the mating surface of both case halves ①.

Yamaha bond No. 1215
90890-85505

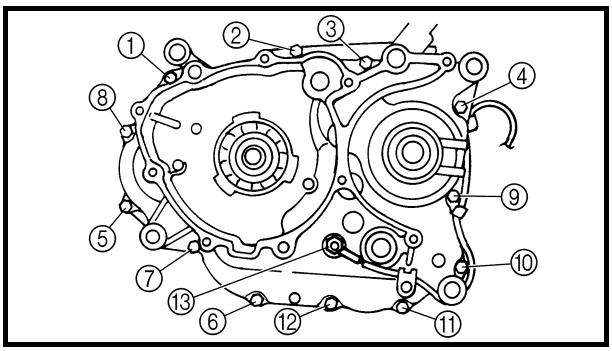
2.Install:
- Dowel pins ②

3.Fit the right crankcase onto the left case.

Tap lightly on the case with a soft hammer.

CAUTION:

Before installing and torquing the crankcase holding bolts, be sure to check whether the transmission is functioning properly by manually rotating the shift cam either way.



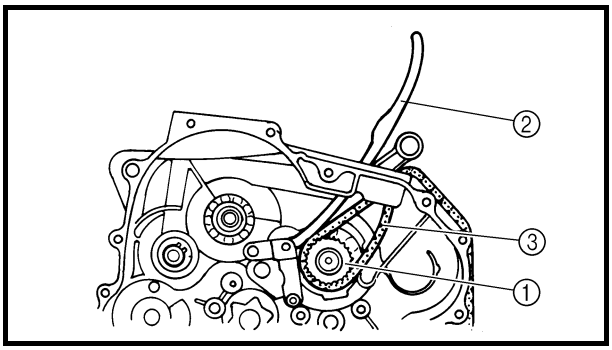
4.Tighten:
- Crankcase bolts

NOTE:
- Tighten the crankcase bolts in stages and in a crisscross pattern.
- Install a copper washer on bolts ①, ②, ③.

M6 × 70 mm bolts: ① ~ ③
M6 × 60 mm bolts: ④, ⑤
M6 × 55 mm bolts: ⑥ ~ ⑧
M6 × 45 mm bolts: ⑨ ~ ⑫

	Bolt (left crankcase): 10 Nm (1.0 m • kg)

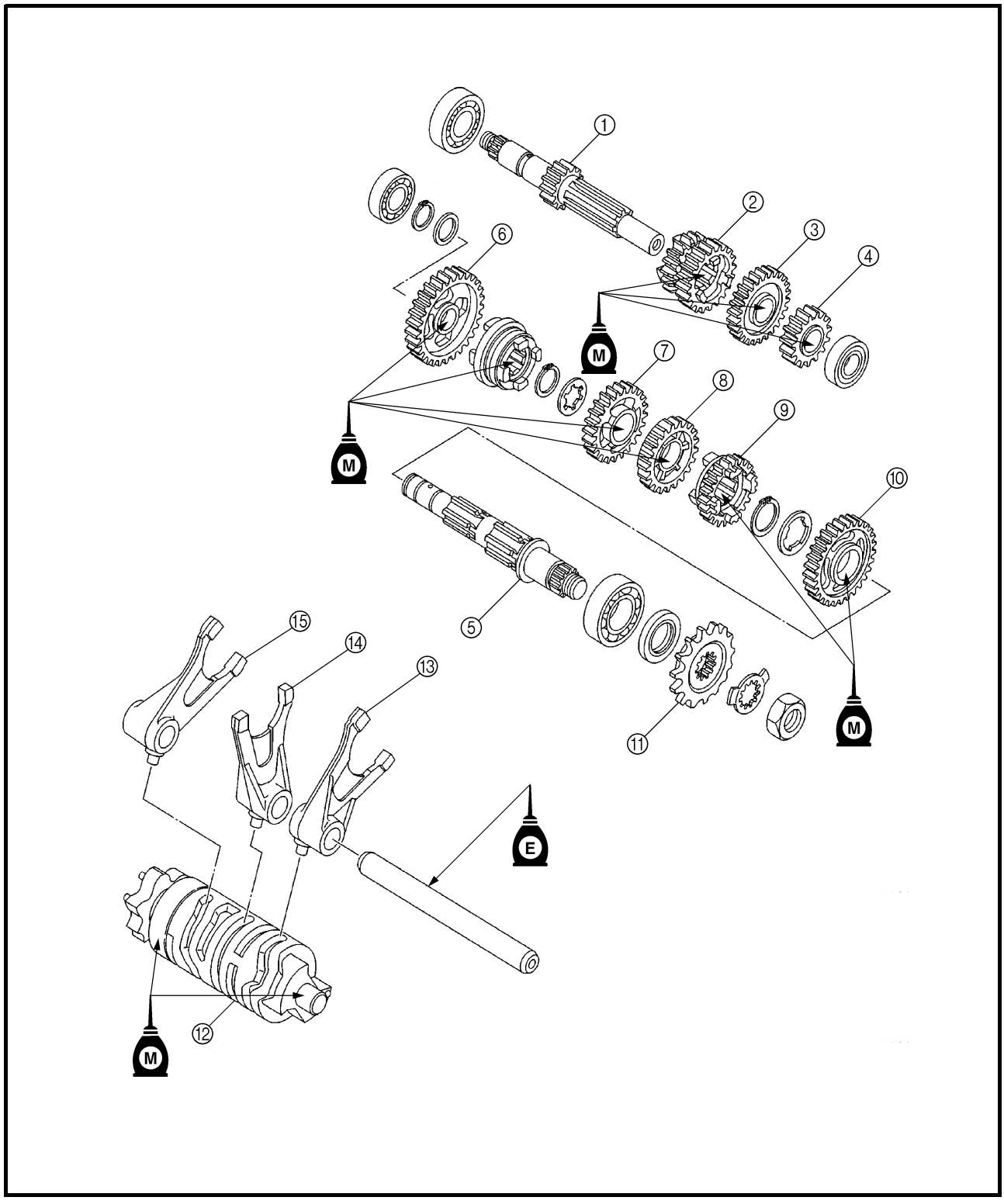
5.Install:
- Neutral switch ⑬

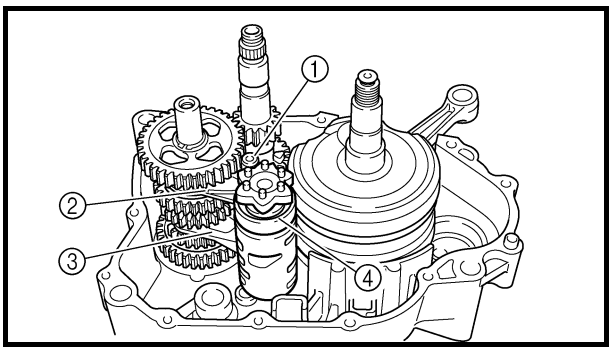


6.Install:
- Push lever (clutch)
- Timing chain drive sprocket ①
- Timing chain guide (intake side) ②
- Timing chain ③

TRANSMISSION

① Main axle/1st pinion gear
② 3rd/4th pinion gear
③ 5th pinion gear
④ 2nd pinion gear
⑤ Drive axle
⑥ 1st wheel gear
⑦ 3rd wheel gear
⑧ 4th wheel gear
⑨ 5th wheel gear
⑩ 2nd wheel gear
⑪ Drive sprocket
⑫ Shift drum assembly
⑬ Shift fork “L”
⑭ Shift fork “C”
⑮ Shift fork “R”



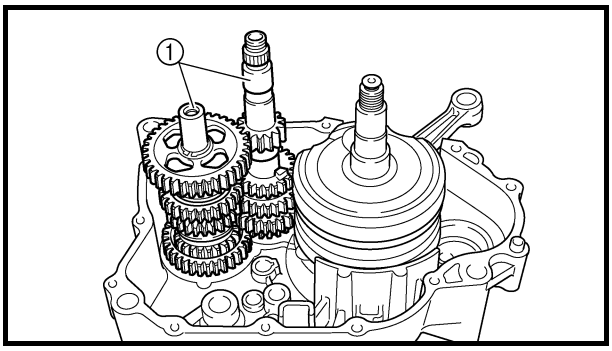


TRANSMISSION REMOVAL

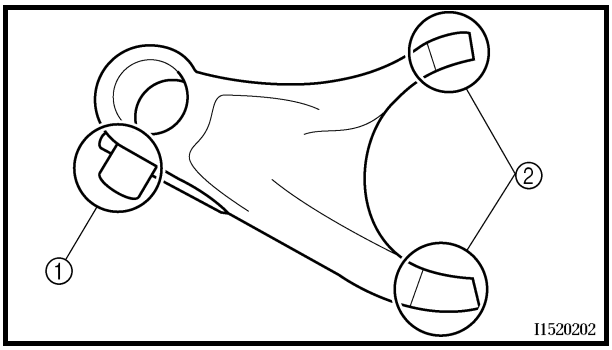
NOTE:
Prior to remove the transmission, separate the crankcase.

1.Remove:
- Dowel pin
- Guide bar ①
- Shift fork "R" ②
- Shift fork "C"
- Shift fork "L" ③
- Shift drum assembly ④

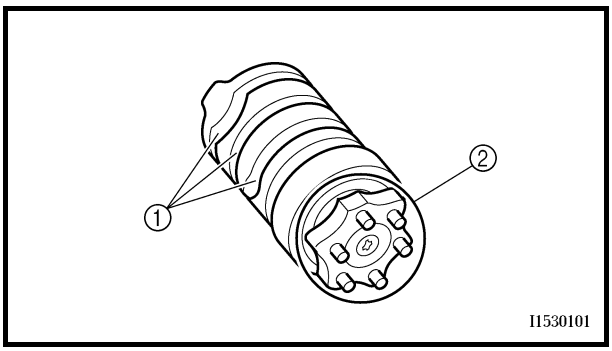
NOTE:
Note the position of each part. Pay particular attention to the location and direction of shift forks.



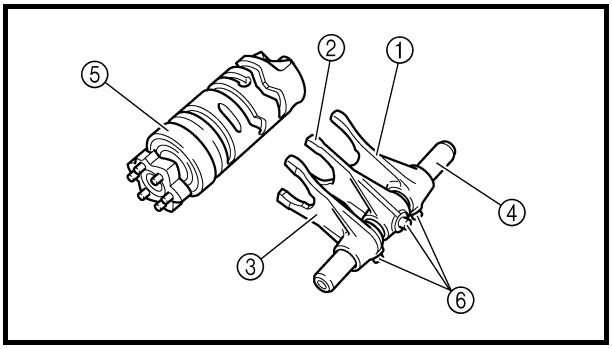
2.Remove:
- Transmission gear assembly ①



T402190
SHIFT FORK SHIFT CAM INSPECTION
1.Inspect:
- Shift fork cam follower ①
- Shift fork pawl ②
  Scoring/bends/wear/damage → Replace.



2.Inspect:
- Shift drum grooves ①
  Wear/damage/scratches → Replace.
- Shift drum segment ②
  Damage/wear → Replace.

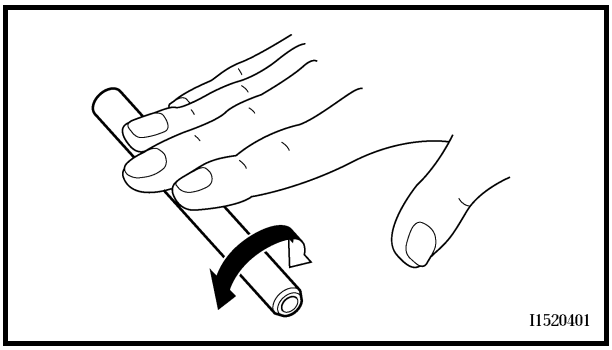


3.Inspect:
- Shift fork “L” ①
- Shift fork “C” ②
- Shift fork “R” ③
- Shift fork guide bar ④
- Shift drum assembly ⑤
- Pin ⑥

Roll the shift fork guide bar on a flat surface.
Bends → Replace.

⚠ WARNING

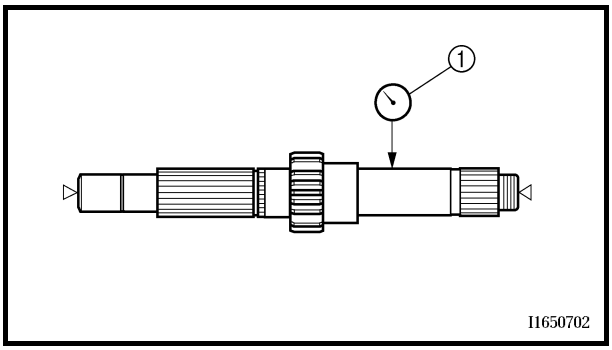
Do not attempt to straighten a bent shift fork guide bar.



4.Check:
- Shift fork movement
  (along the shift fork guide bar)
  Unsmooth operation → Replace the shift fork and the shift fork guide bar.

NOTE:

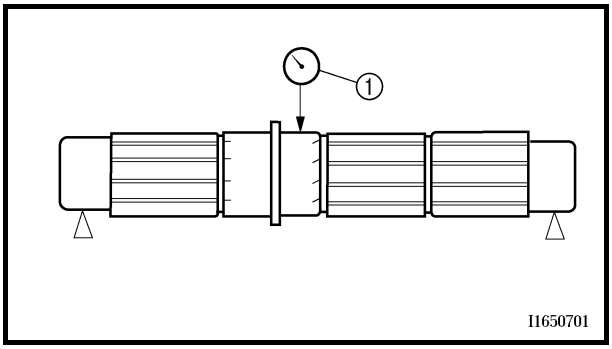
When damaged the shift fork and mission gear, replace the facing each gear as set.



EAS00424
TRANSMISSION INSPECTION

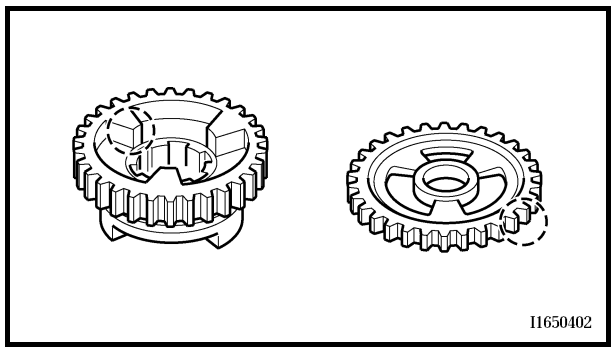
1.Measure:
- Main axle runout
  (with a centering device and dial gauge ①)
  Out of specification → Replace the main axle.

	Main axle runout limit **0.08 mm**

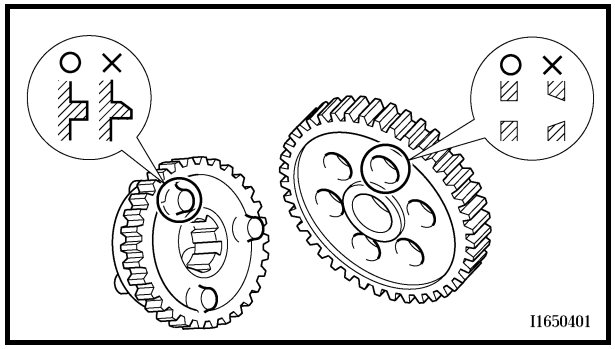


2.Measure:
- Drive axle runout
  (with a centering device and dial gauge ①)
  Out of specification → Replace the drive axle.

	Drive axle runout limit **0.08 mm**

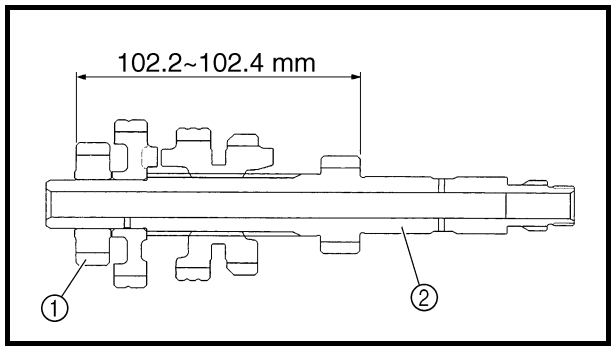


3.Check:
- Transmission gears
  Blue discoloration/pitting/wear → Replace the defective gear(s).



- Transmission gear dogs
  Cracks/damage/rounded edges → Replace the defective gear(s).

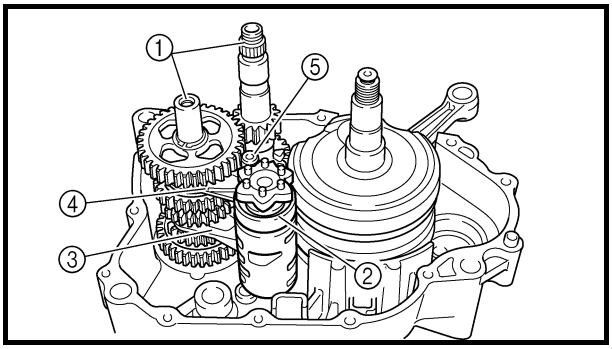
4.Check:
- Transmission gear engagement
  (each pinion gear to its respective wheel gear)
  Incorrect → Reassemble the transmission axle assemblies.



NOTE:
When reassembling the main axle, press the 2nd pinion gear ① onto it ② as shown.

5.Check:
- Transmission gear movement
  Rough movement → Replace the defective part(s).

6.Check:
- Circlips
  Damage/bends/looseness → Replace.



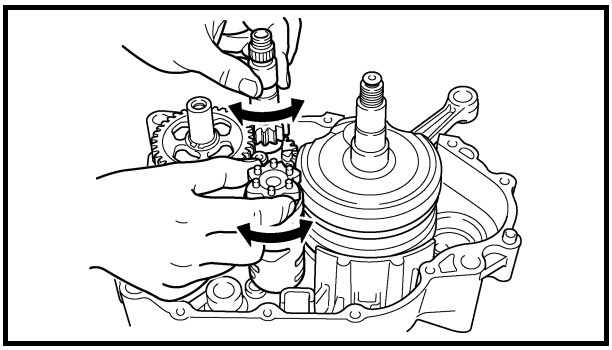
TRANSMISSION INSTALLATION

1.Install:

- Transmission gears assembly ①
- Shift drum assembly ②
- Shift fork “L” ③
- Shift fork “C”
- Shift fork “R” ④
  Into the crankcase (right)
- Guide bar ⑤

NOTE:

Facing the mark on shift fork down ward.



2.Check:

- Shifter operation
  Unsmooth operation → Repair.

NOTE:

- Oil each gear and bearing thoroughly.
- Before assembling the crankcase, be sure that the transmission is in neutral and that the gears turn freely.

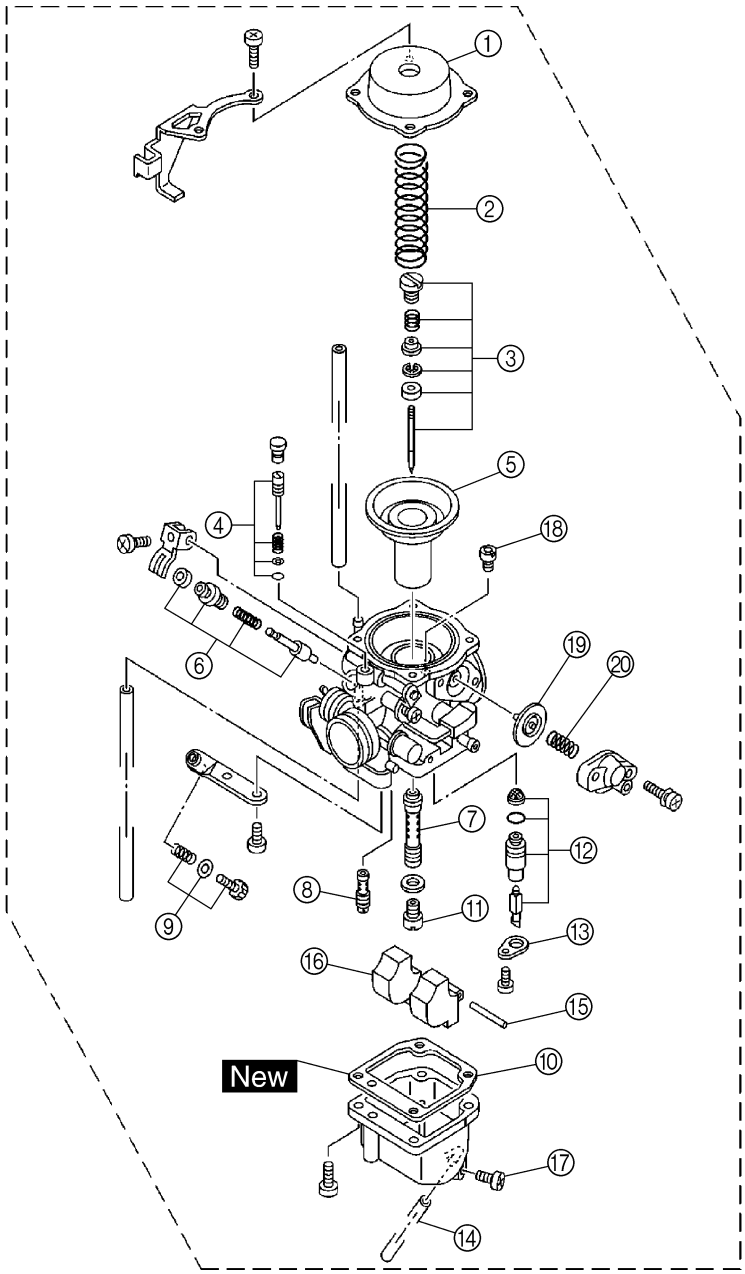
CHAPTER 5.
CARBURETION

CARBURETOR 5-1
REMOVAL 5-2
DISASSEMBLY 5-3
INSPECTION 5-5
ASSEMBLY 5-7
INSTALLATION 5-9
FUEL LEVEL ADJUSTMENT 5-10

CARBURETION

CARBURETOR

① Vacuum chamber cover
② Piston valve spring
③ Jet needle set
④ Pilot screw set
⑤ Piston valve
⑥ Starter plunger assembly
⑦ Needle jet
⑧ Pilot jet
⑨ Throttle stop screw set
⑩ Gasket
⑪ Main jet
⑫ Needle valve assembly
⑬ Needle valve holder
⑭ Drain hose
⑮ Float pivot pin
⑯ Float
⑰ Drain screw
⑱ Pilot air jet
⑲ Coasting enricher
⑳ Coasting enricher spring



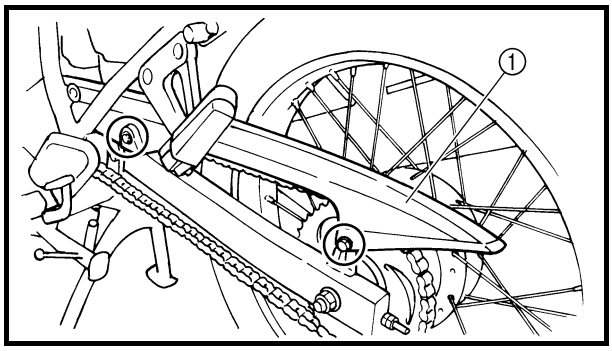
REMOVAL

⚠ WARNING

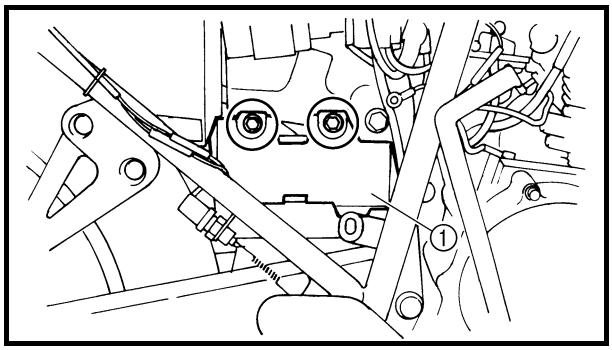
Gasoline is highly flammable.
Avoid spilling fuel on the hot engine.

1.Remove:
- Fuel tank
  Refer to the “FUEL TANK” section in CHAPTER 3.

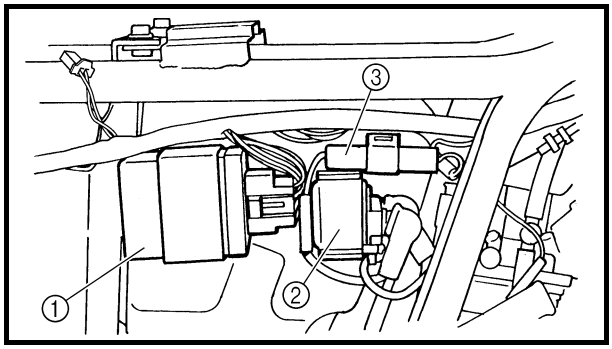
2.Remove:
- Battery
  Refer to the “BATTERY INSPECTION” section in CHAPTER 3.



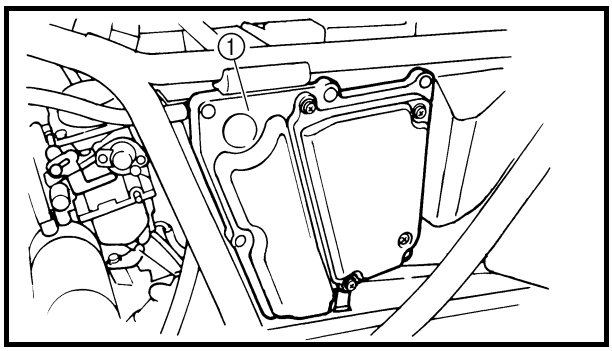
3.Remove:
- Drive chain guard ①



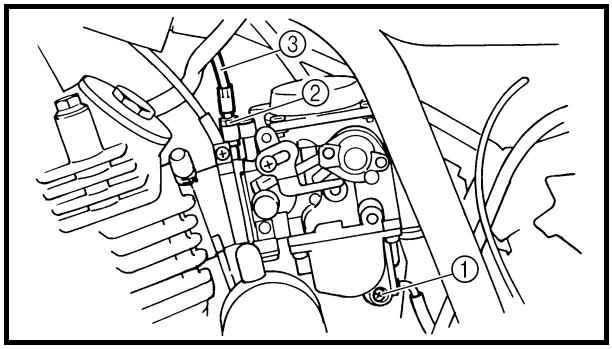
4.Remove:
- Battery case ①



5.Remove:
- CDI unit ①
- Starter relay ②
- Fuse ③



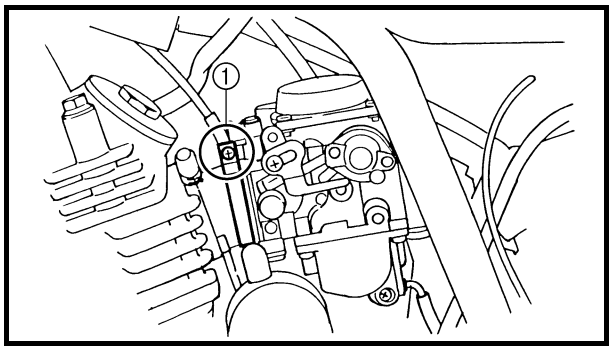
6.Remove:
- Air filter case ①



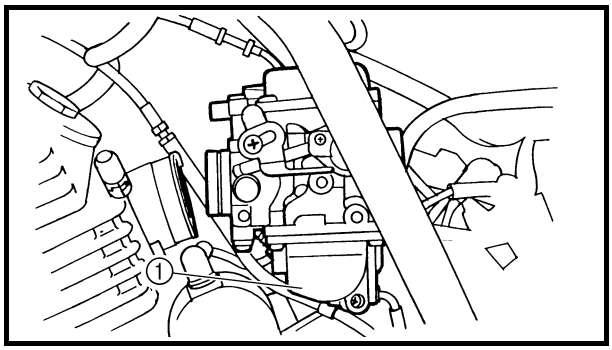
7.Drain:
- Loosen the drain screw ① and drain the gasoline

8.Loosen:
- Lock nut ② (throttle cable)

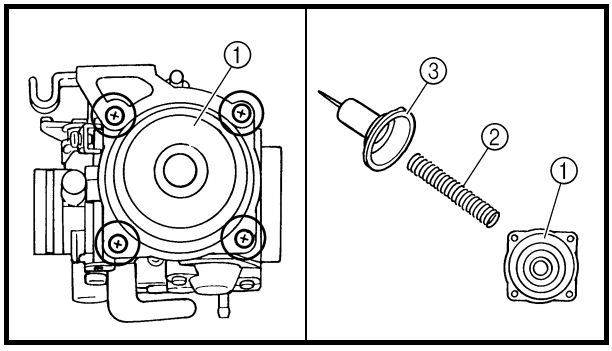
9.Remove:
- Throttle cable ③



10.Loosen:
- Screw ① (carburetor joint)



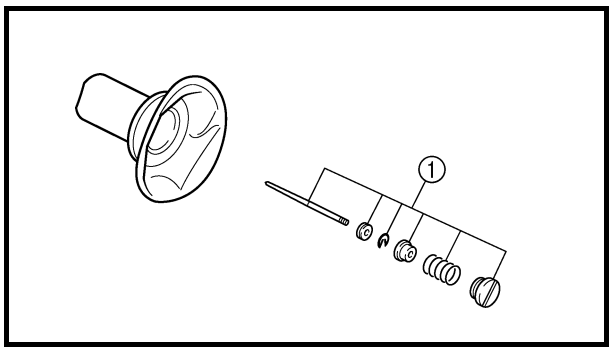
11.Remove:
- Carburetor ①



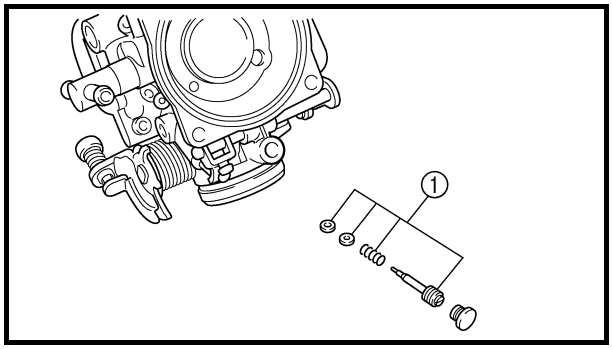
DISASSEMBLY

1.Remove:
- Vacuum chamber cover ①

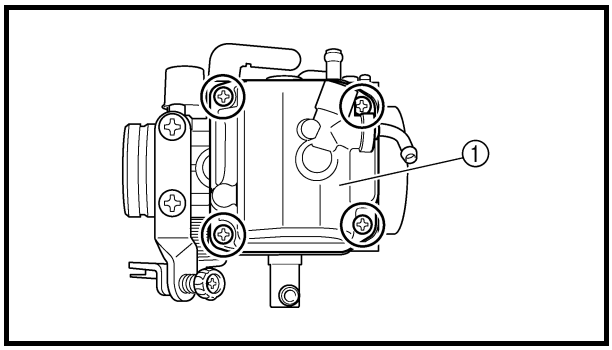
2.Remove:
- Piston valve spring ②
- Piston valve ③



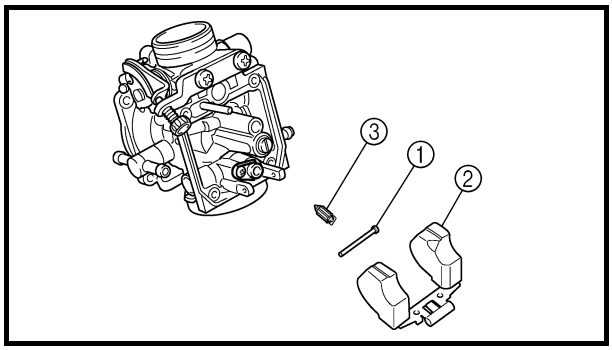
3.Remove:
- Jet needle set ①



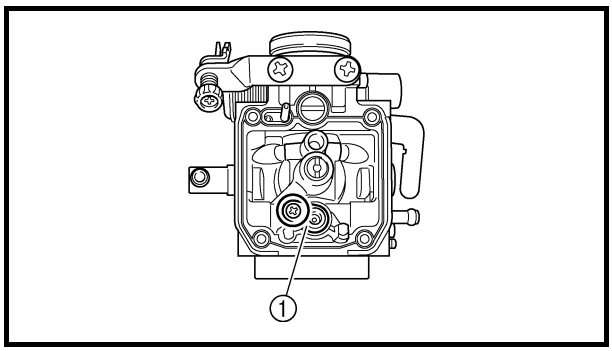
4.Remove:
- Pilot screw set ①



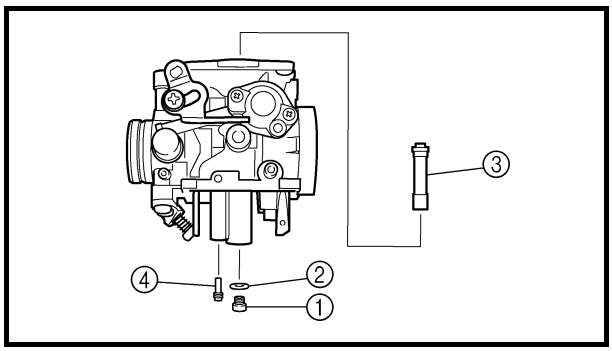
5.Remove:
- Float chamber cover ①
- Gasket



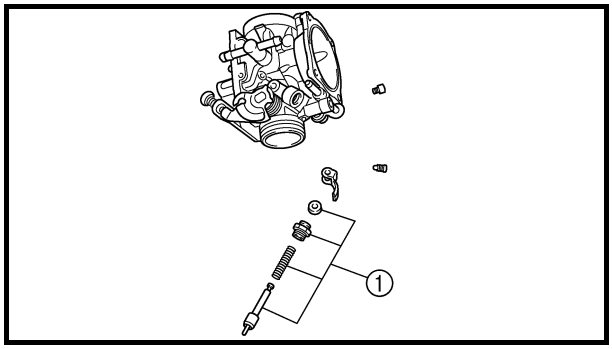
6.Remove:
- Float pivot pin ①
- Float ②
- Needle valve ③



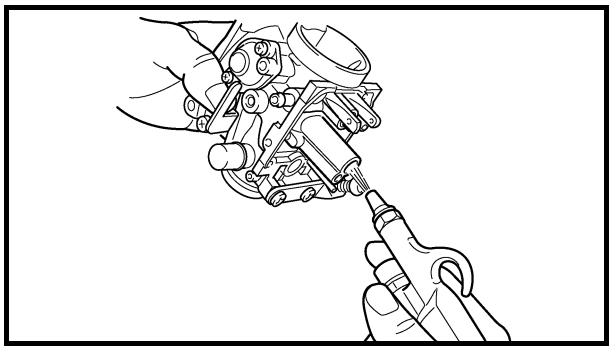
7.Remove:
- Needle valve holder ①



8.Remove:
- Main jet ①
- Washer ②
- Needle jet ③
- Pilot jet ④



9.Remove:
- Starter plunger assembly ①



INSPECTION

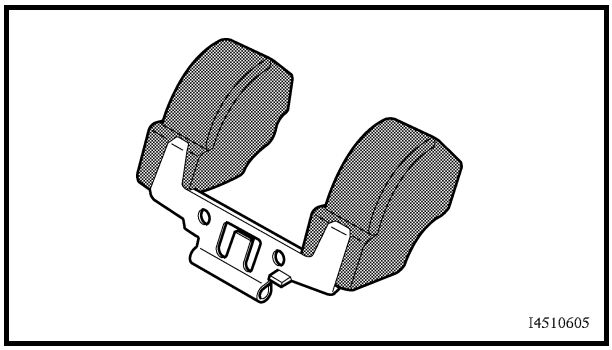
1.Inspect:
- Carburetor body
- Fuel passage
  Contamination → Clean as indicated.

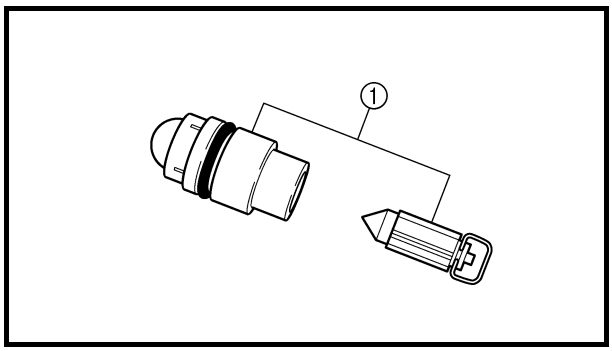
****

Carburetor cleaning steps:
- Wash carburetor in petroleum based solvent. (Do not use any caustic carburetor cleaning solution.)
- Blow out all passages and jets with a compressed air.

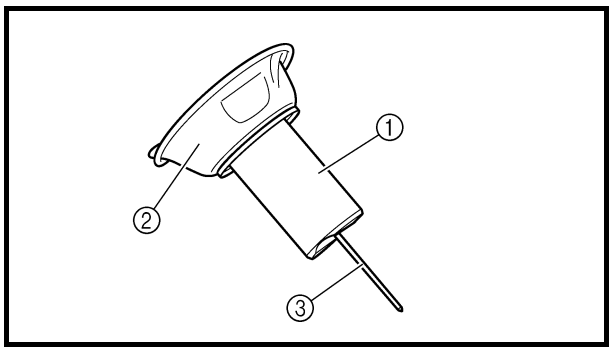
****

2.Inspect:
- Float
  Damage → Replace.



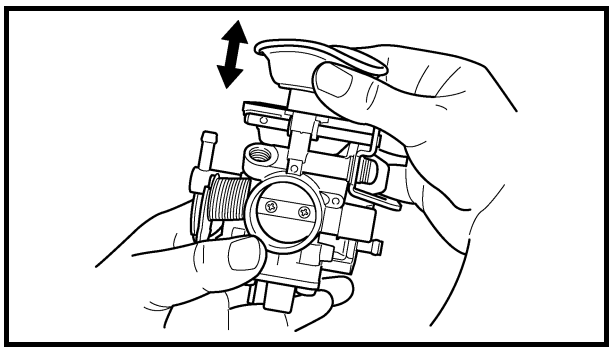


3.Inspect:
- Needle valve assembly ①
  Damage/wear/contamination → Replace as a set.

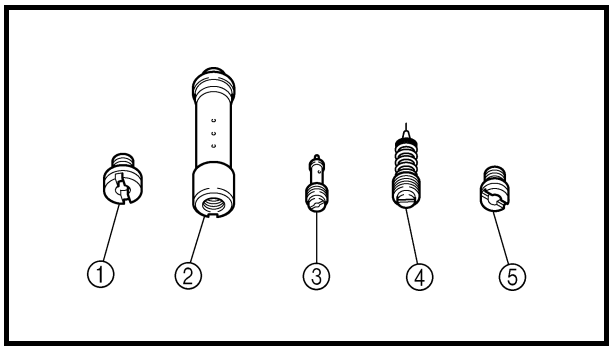


4.Inspect:
- Piston valve ①
  Cracks → Replace.
- Rubber diaphragm ②
  Tears → Replace.
- Jet needle ③
  Bend → Replace.

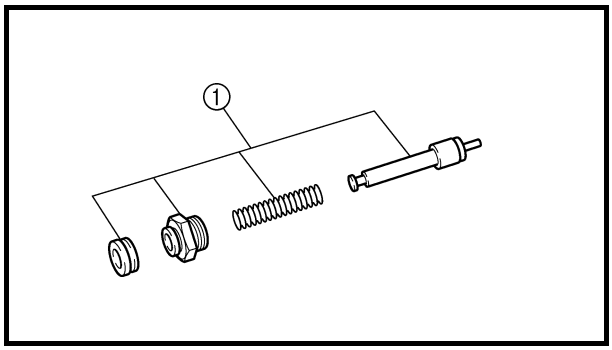
NOTE:
If you suspect the piston valve has been damaged, check the component for cracks by pouring gasoline into the valve. If it leaks, replace with a new piston valve.



5.Check:
- Free movement
  Insert the throttle valve into the carburetor body, and check for free movement.
  Stick → Replace.



6.Inspect:
- Main jet ①
- Needle jet ②
- Pilot jet ③
- Pilot screw ④
- Pilot air jet ⑤
  Bends/wear/damage → Replace.
  Contamination → Blow out jets with a compressed air.



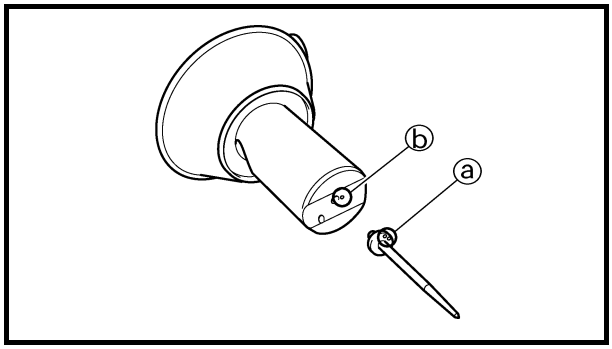
7.Inspect:
- Starter plunger assembly ①

ASSEMBLY

To assemble the carburetor reverse the disassembly procedures. Note the following points.

NOTE:

- Before reassembling wash all parts in clean gasoline.
- Always use a new gasket.

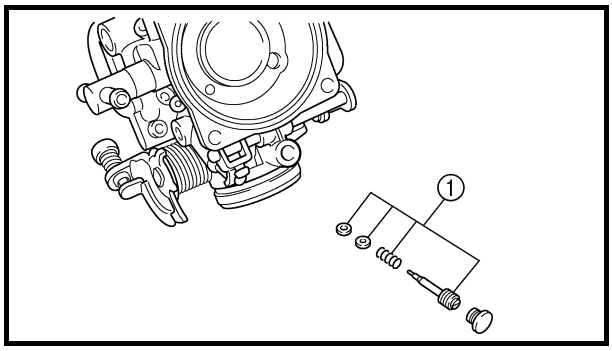


1.Install:

- Jet needle set
  To piston valve assembly

NOTE:

Be sure to install the jet needle plate so that the projection ⓐ is located toward the hole ⓑ in the piston valve.



2.Install:

- Pilot screw set ①

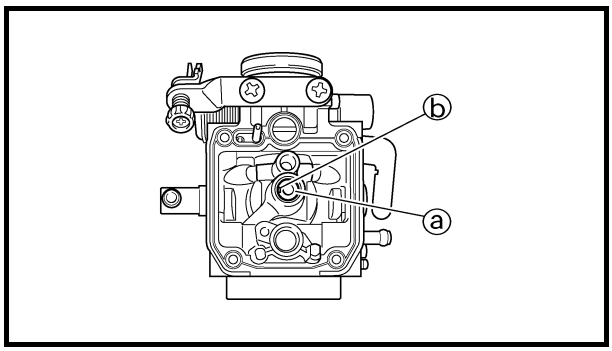
****

Note the following installation points:

- Screw in the pilot screw ④ until it is lightly seated.
- Back out by the specified number of turns.

	Pilot screw (turn out): **2-1/2**

****

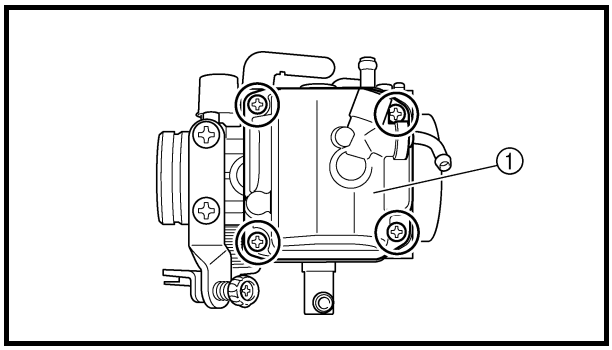


3.Install:
- Needle jet
  To carburetor

NOTE:
Be sure to insert the slot ⓐ onto the projection ⓑ.

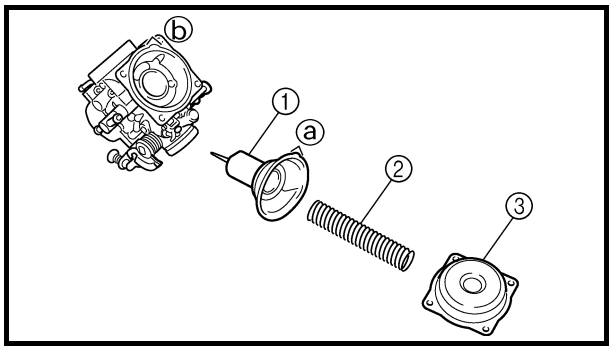
4.Install:
- Needle valve holder

	Screw (float valve holder): 2 Nm (0.2 m • kg)



5.Install:
- Float chamber cover ①

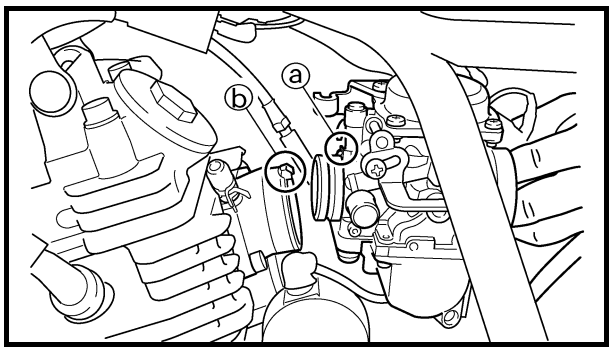
	Screw (float chamber cover): 5 Nm (0.5 m • kg)



6.Install:
- Piston valve assembly ①
- Piston valve spring ②
- Vacuum chamber cover ③

	Screw (vacuum chamber cover): 4 Nm (0.4 m • kg)

NOTE:
Match the tab ⓐ on the rubber diaphragm to the matching recess ⓑ in the piston valve.



INSTALLATION

Reverse the “REMOVAL” procedure.

Note the following points:

1.Install:

- Carburetor

NOTE:

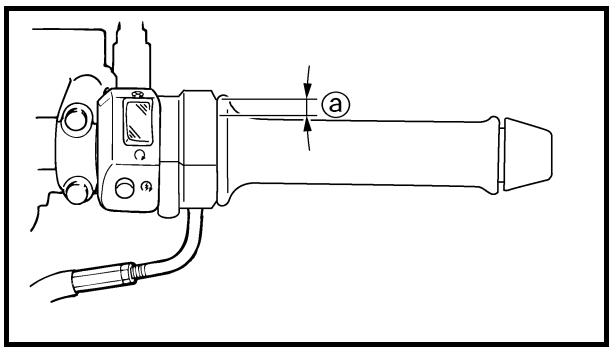
Be sure to insert the projection ⓐ into the slot ⓑ of carburetor joint.

2.Adjust:

- Engine idle speed

  Refer to the “IDLING SPEED ADJUSTMENT” section in CHAPTER 3.

	Engine idle speed: **1,350 ~ 1,450 r/min**

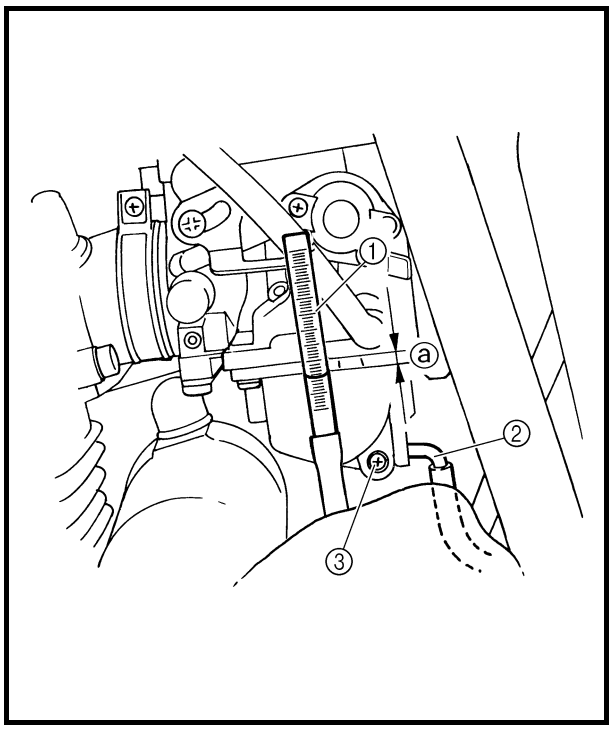


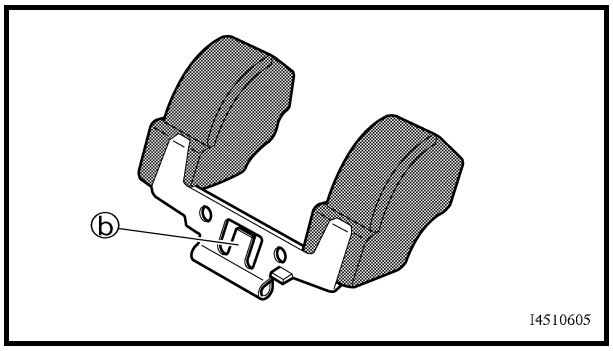
3.Adjust:

- Throttle cable free play ⓐ (throttle grip)

  Refer to the “THROTTLE CABLE ADJUSTMENT” section in CHAPTER 3.

	Throttle cable free play: **3 ~ 5 mm**





FUEL LEVEL ADJUSTMENT

1.Measure:

- Fuel level ⓐ
  Out of specification → Adjust.

Fuel level:
2.7 ~ 4.7 mm below the float chamber line

****

Fuel level measurement and adjustment steps:

- Place the motorcycle on a level surface.
- Use centerstand to ensure that the carburetor is positioned vertically.
- Connect the fuel level gauge ① to the drain pipe ② using a level gauge adapter.

Fuel level gauge:
90890-01312

- Loosen the drain screw ③.
- Measure the fuel level ⓐ with the gauge.
- If the fuel level in incorrect, adjust the fuel level.
- Remove the carburetor.
- Inspect the needle valve.
- If it is worn, replace it.
- If it is fine, adjust float level by bending the float tang ⓑ slightly.
- Install the carburetor.
- Recheck the fuel level.

****

CHAPTER 6.
CHASSIS

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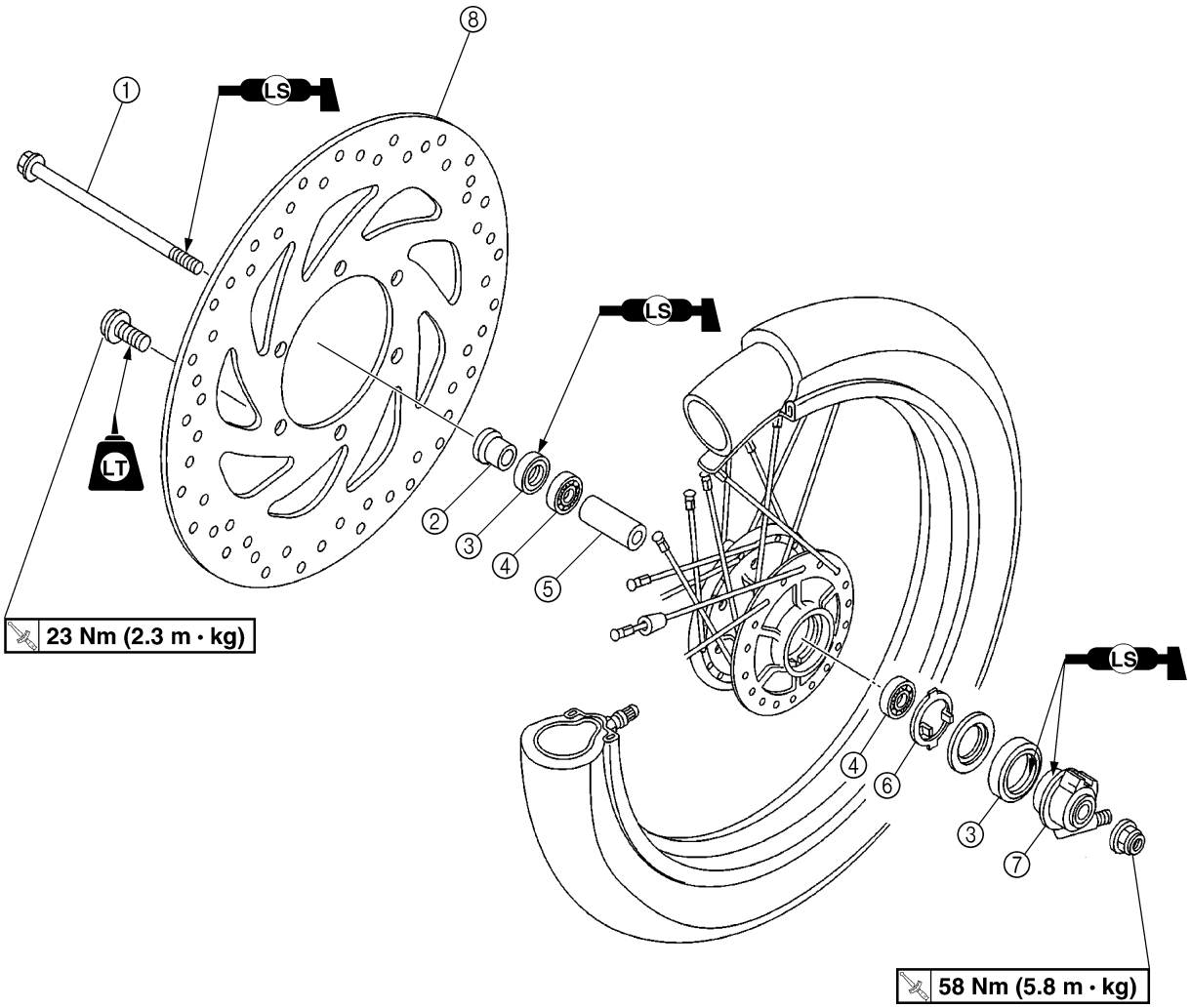
CHASSIS

FRONT WHEEL AND BRAKE DISC

① Front wheel axle
② Collar
③ Oil seal
④ Bearing
⑤ Spacer
⑥ Meter clutch
⑦ Speedometer gear unit
⑧ Brake disc

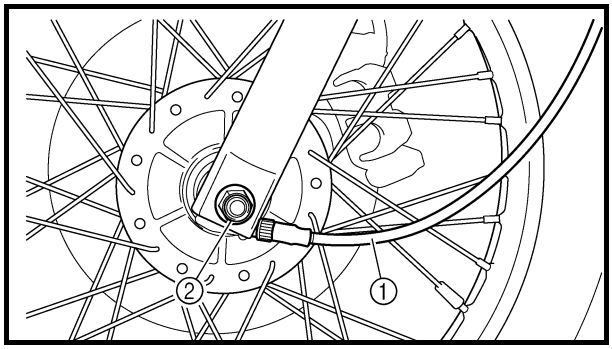


FRONT WHEEL REMOVAL

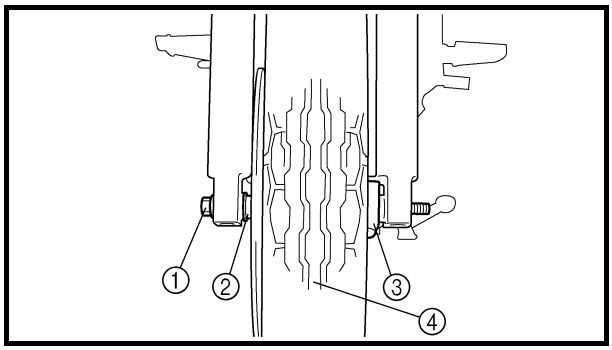
⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

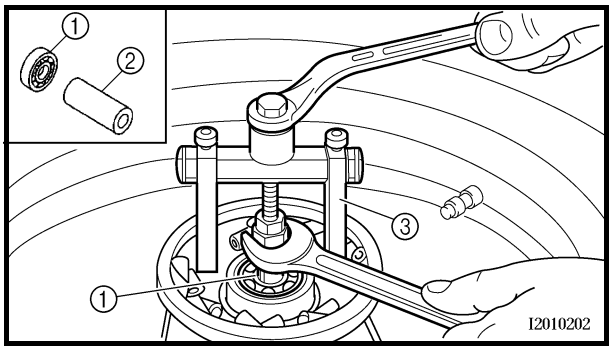
1.Place the motorcycle on level place.



2.Remove:
- Speedometer cable ①
- Front wheel axle nut ②



3.Remove:
- Front wheel axle ①
- Collar ②
- Speedometer gear unit ③
- Front wheel ④



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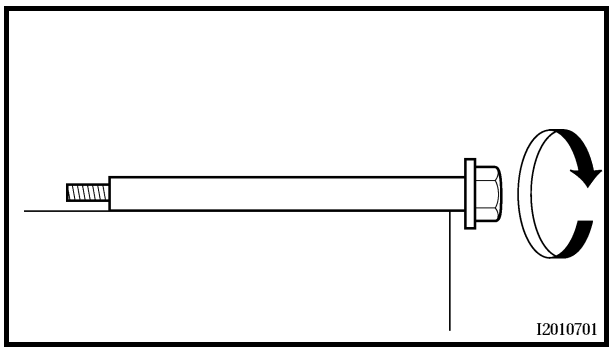
FRONT WHEEL DISASSEMBLY

1.Remove:
- Bearings ①
- Spacer ②

Remove the bearings using a general bearing puller ③.



T700021
FRONT WHEEL INSPECTION

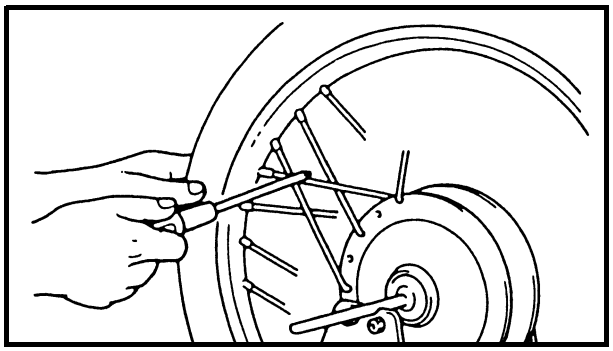
1.Inspect:
- Front wheel axle
  (by rolling it on a flat surface)
  Bends → Replace.

⚠ WARNING

Do not attempt to straighten a bent axle.

Wheel axle bending limit:
0.25 mm

2.Inspect:
- Front tire
  Wear/damage → Replace.
  Refer to the “TIRE INSPECTION” section in CHAPTER 3.
- Front wheel
  Refer to the “WHEEL INSPECTION” section in CHAPTER 3.

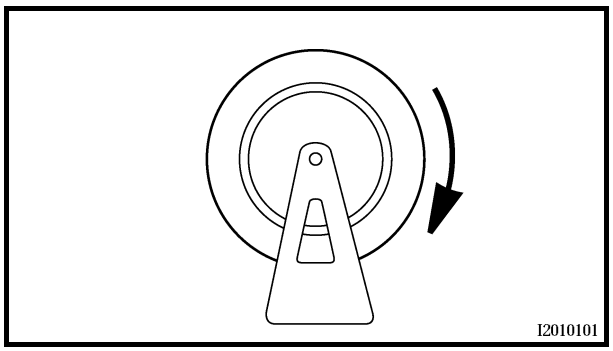


3.Check:
- Spokes
  Bends/damage → Replace.
  Loose spokes → Retighten.
  Turn the wheel and tap the spokes with a screwdriver.

NOTE:
A tight spoke will emit a clear, ringing tone; a loose spoke will sound flat.

4.Tighten:
- Loose spokes
- Nipple

NOTE:
Check the front wheel runout after tightening the spokes.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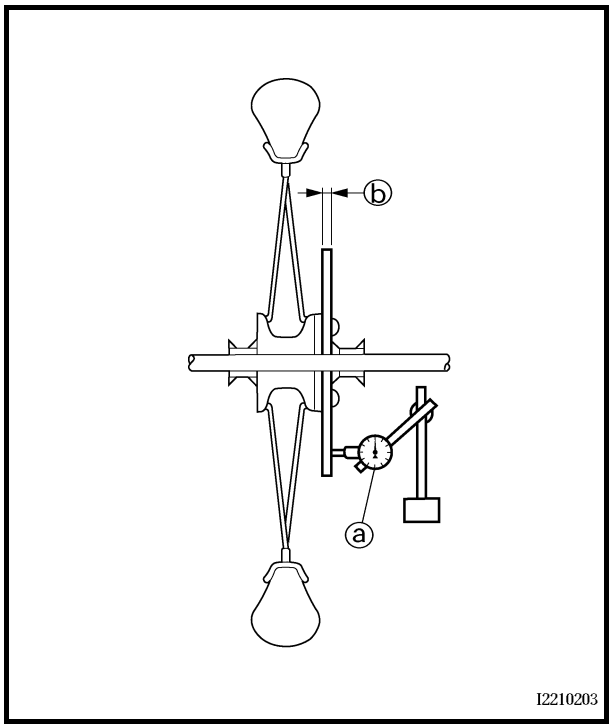
5.Measure:
- Front wheel runout
  Over the specified limits → Replace.

Front wheel runout limits:
Radial: 2.0 mm
Lateral: 2.0 mm

6.Inspect:
- Front wheel bearings
  Bearings allow free play in the wheel hub or the wheel does not turn smoothly → Replace.
- Oil seals
  Wear/damage → Replace.

7.Inspect:
- Collar
  Grooved wear → Replace the collar and the oil seal as a set.



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BRAKE DISC INSPECTION

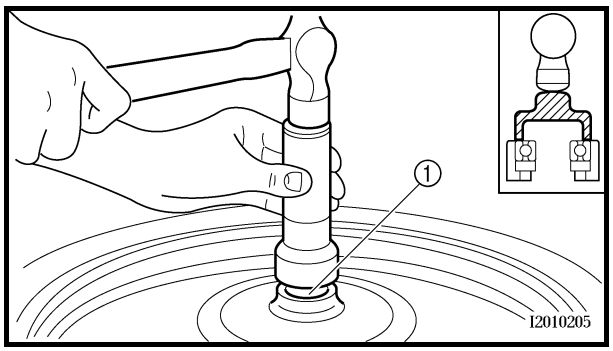
1.Inspect:
- Brake disc
  Galling/damage → Replace.

2.Measure:
- Brake disc deflection ⓐ
  Out of specification → Inspect the wheel runout.
  If wheel runout is within the limits, replace the brake disc.

Brake disc maximum deflection:
0.15 mm

  Measuring point 2 mm
- Brake disc thickness ⓑ
  Out of specification → Replace.

Brake disc minimum thickness:
3.5 mm



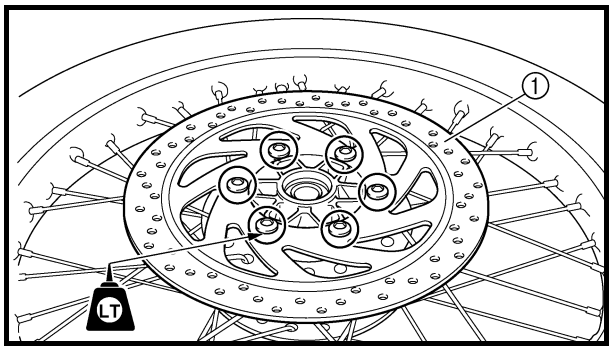
FRONT WHEEL ASSEMBLY

1.Install:
- Bearing ①
- Spacer
- Bearing
- Oil seal

NOTE:
- Apply the lithium soap base grease on the bearing and oil seal lip when installing.
- Use a socket that matches the outside diameter of the race of the bearing.
- Always use a new oil seal.
- Install the oil seal with its manufacturer's marks or numbers facing outward.

CAUTION:

Do not strike the inner race of balls of the bearing. Contact should be made only with the outer race.

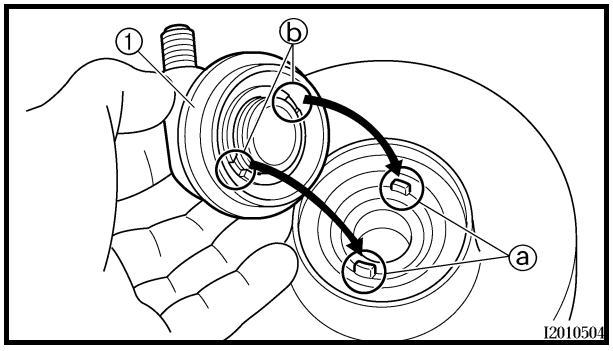


FRONT WHEEL INSTALLATION

1.Install:
- Brake disc ①

23 Nm (2.3 m • kg)

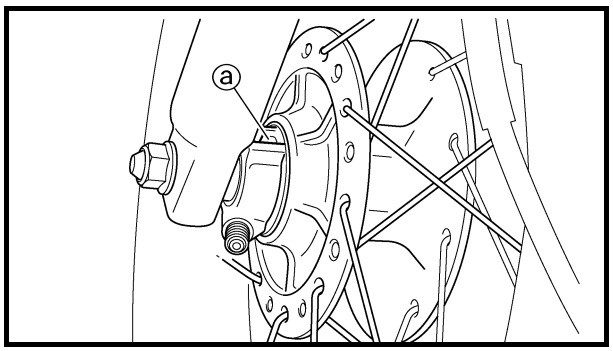
NOTE:
- Apply LOCTITE® to the threads of the brake disc bolts.
- Tighten the brake disc bolts in stages using a crisscross pattern.



2.Install:
- Speedometer gear unit ①

NOTE:

Be sure that projections ⓐ inside the wheel hub mesh with the slots ⓑ in the gear unit assembly.



3.Tighten:
- Front wheel axle nut

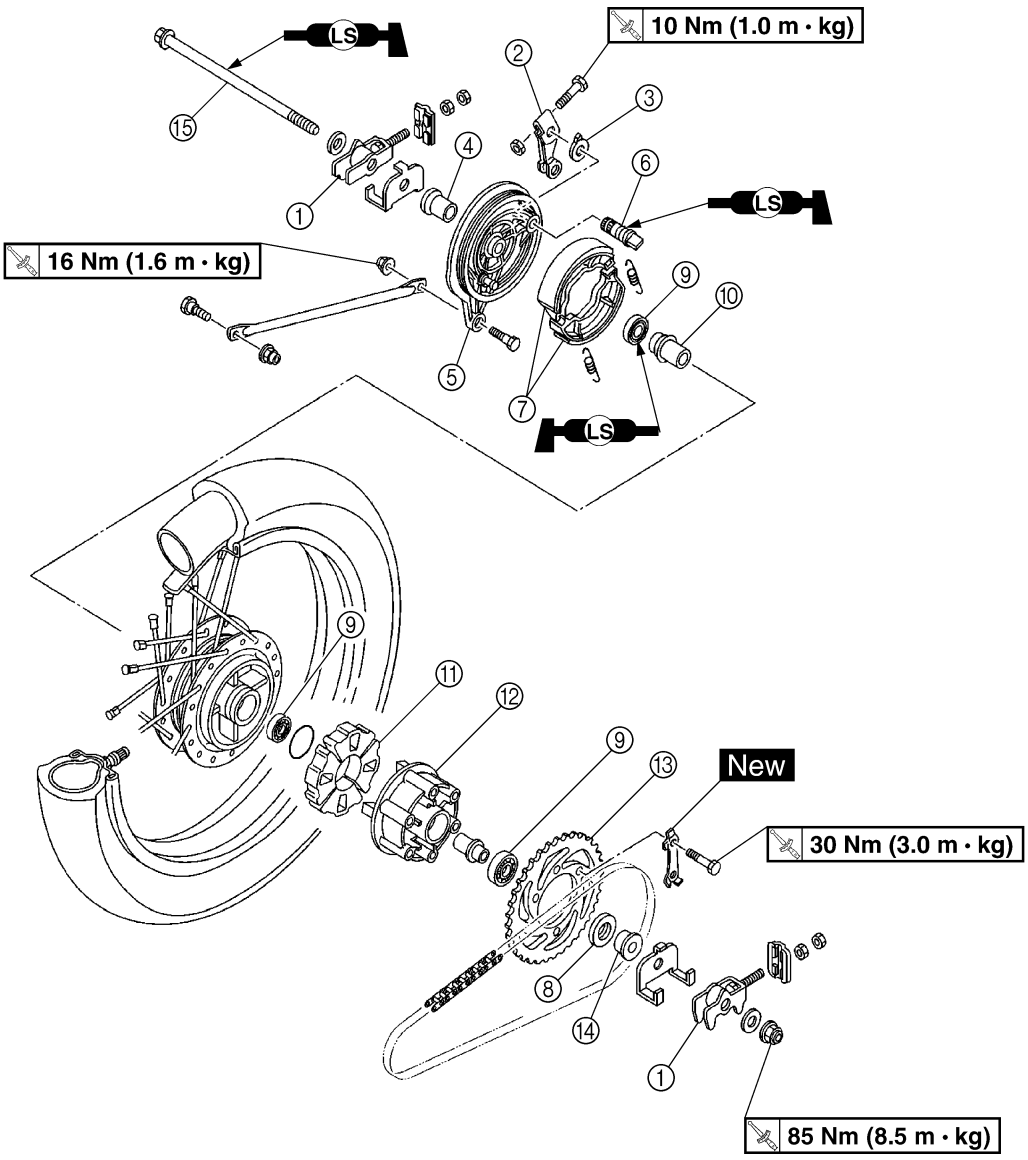
58 Nm (5.8 m • kg)

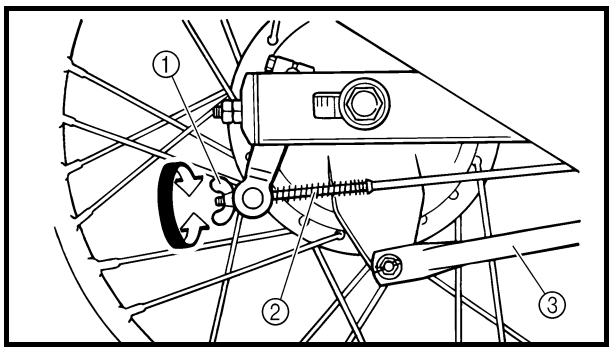
NOTE:
Be sure that the projection (torque stopper) ⓐ of the gear unit housing is positioned correctly.

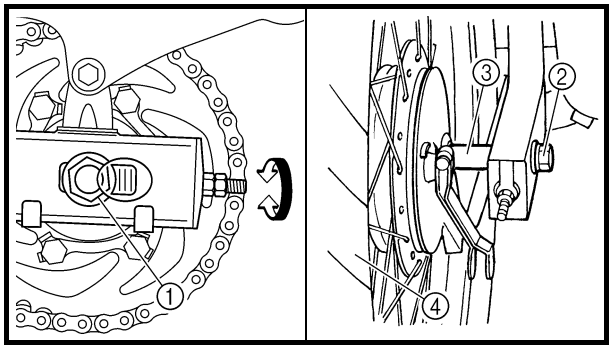
4.Connect:
- Speedometer cable

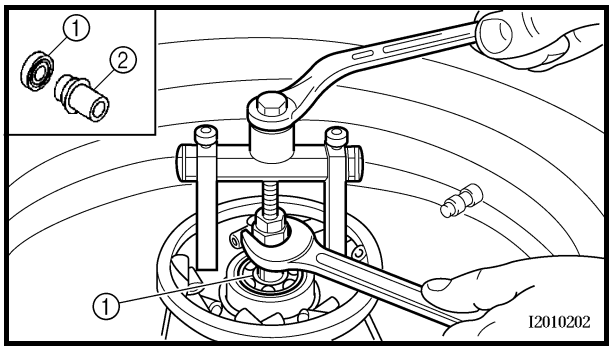
REAR WHEEL AND REAR BRAKE

① Drive chain puller
② Brake camshaft lever
③ Brake shoe wear indicator
④ Spacer
⑤ Brake shoe plate
⑥ Brake camshaft
⑦ Brake shoe
⑧ Oil seal
⑨ Bearing
⑩ Spacer
⑪ Rear wheel clutch hub damper
⑫ Rear wheel clutch hub
⑬ Driven sprocket
⑭ Collar
⑮ Rear wheel axle









REAR WHEEL REMOVAL

1.Remove:
- Adjuster ①
- Brake rod ②
- Tension bar ③

NOTE:
Depress the brake pedal to remove the brake rod.

2.Loosen:
- Rear wheel axle nut ①
- Locknuts
- Drive chain adjuster nuts

3.Remove:
- Rear wheel axle nut ①
- Rear wheel axle ②
- Washers
- Spacer ③
- Rear wheel ④

4.Remove:
- Brake shoe plate

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REAR WHEEL DISASSEMBLY

1.Remove:
- Bearings ①
- Spacer ②

Refer to the “FRONT WHEEL AND BRAKE DISC” section.

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REAR WHEEL INSPECTION

1.Inspect:
- Rear wheel axle
- Rear wheel
- Rear wheel bearings
- Oil seals

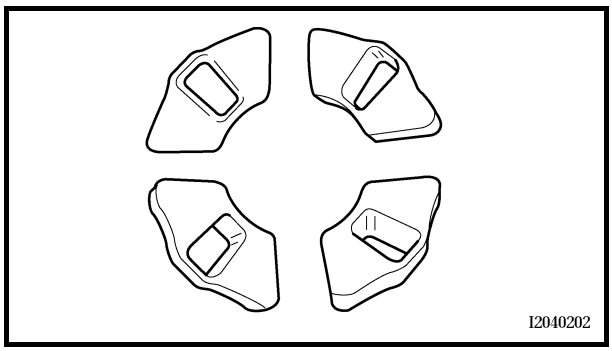
Refer to the “FRONT WHEEL AND BRAKE DISC” section.

2.Check:
- Spokes

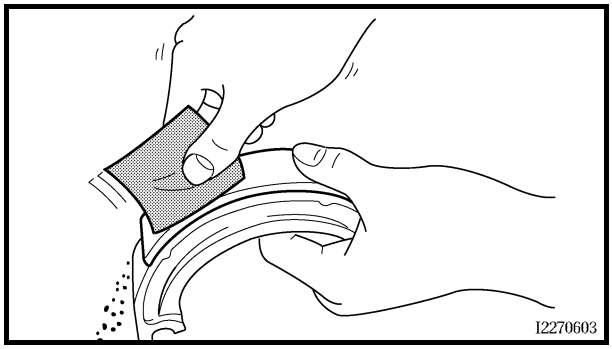
Refer to the “FRONT WHEEL AND BRAKE DISC” section.

3.Measure:
- Rear wheel runout

Refer to the “FRONT WHEEL AND BRAKE DISC” section.



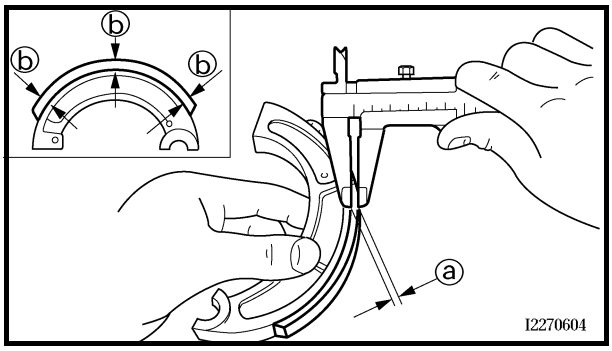
4.Inspect:
- Rear wheel clutch hub damper
  Wear/damage → Replace.



REAR BRAKE INSPECTION

1.Inspect:
- Brake shoes
  Glazed parts → Sand with coarse sandpaper.

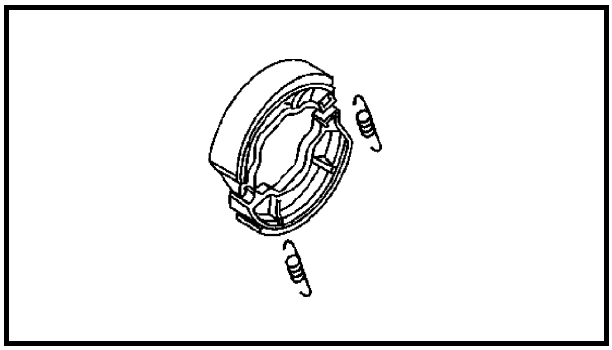
NOTE:
After using the sandpaper, clean of the polished particles with a cloth.



2.Measure:
- Brake shoe thickness ⓐ
  Out of specification → Replace.

	Brake shoe thickness (limit): 1.0 mm

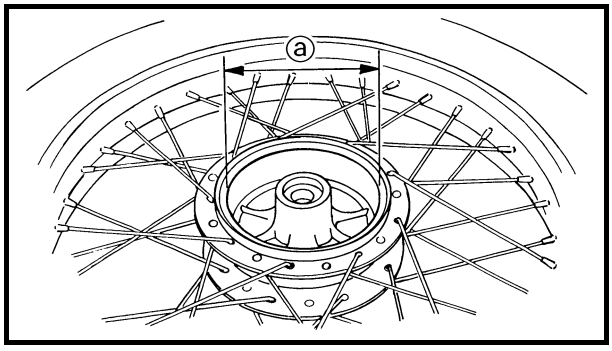
ⓑ Measure point



3.Inspect:
- Brake shoe spring
  Wear/damage → Replace.

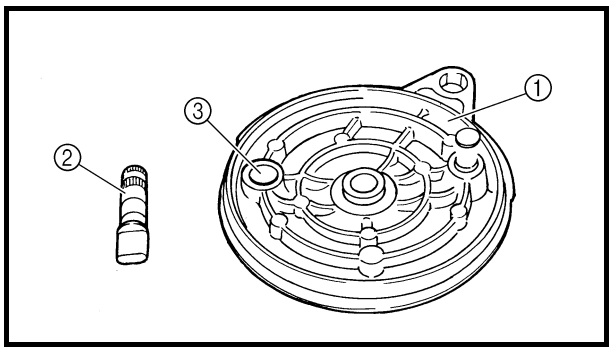
4.Inspect:
- Brake drum inner surface
  Oil/scratches → Remove.

Oil	**Use a rag soaked in lacquer thinner or solvent.**
Scratch	**Use an emery cloth (lightly and evenly polishing).**

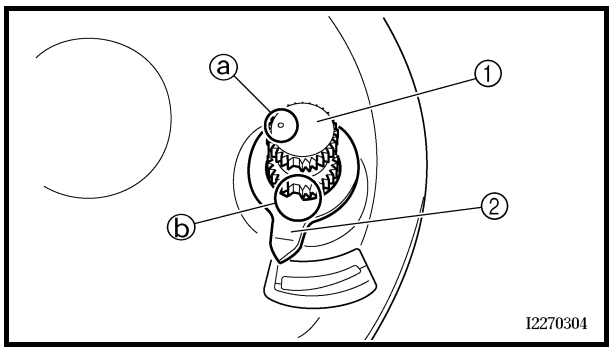


5.Measure:
- Brake drum inside diameter ⓐ
  Out of specification → Replace.

	Standard	**130 mm**
	Wear limit	**131 mm**



6.Inspect:
- Brake shoe plate ①
  Cracks/damage → Replace.
- Brake camshaft ②
- Camshaft hole ③
  Scratches/excessive wear → Replace.



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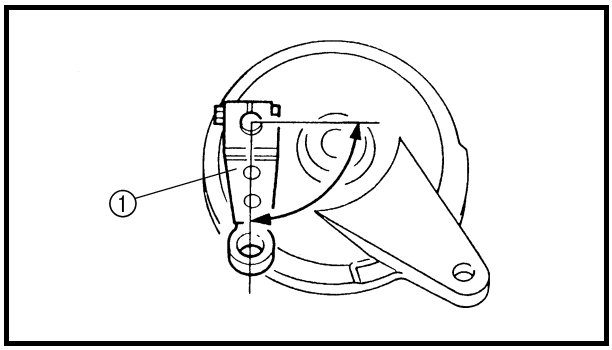
BRAKE SHOE PLATE ASSEMBLY
1.Install:
- Brake camshaft ①
- Brake shoe wear indicator ②

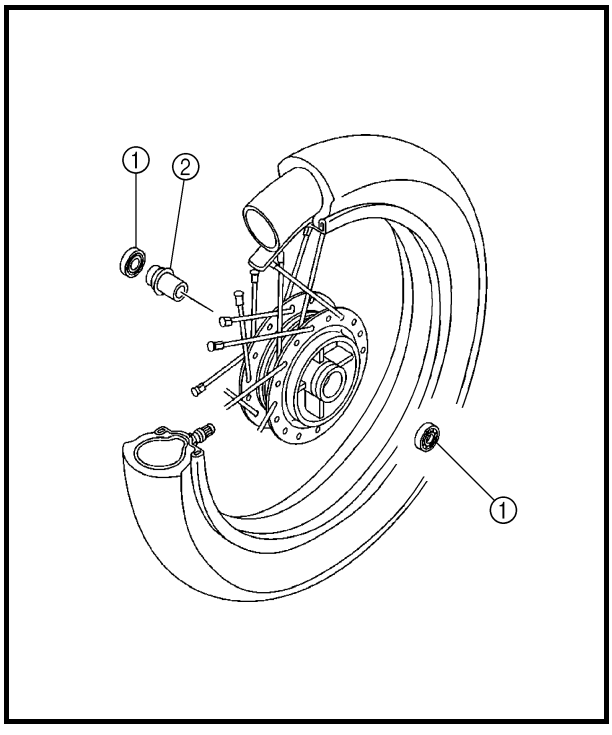
****

Installation steps:
- Set the camshaft with its punched mark ⓐ facing the direction as shown.
- Align the projection ⓑ on the indicator with the camshaft notch and install.
- Check the proper position of the brake shoe.

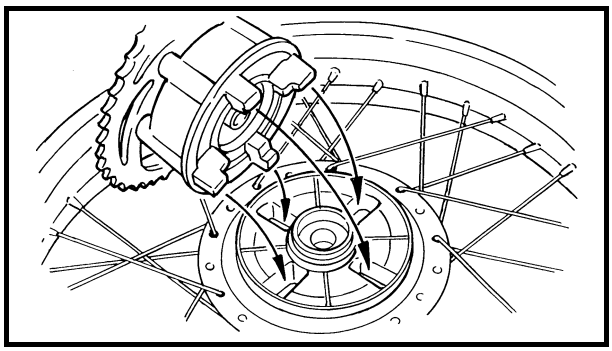
****

2.Install:
- Brake camshaft lever ①
  Install the camshaft lever with its slit and the indicator at right angle as shown.





T******
REAR WHEEL ASSEMBLY
1.Install:
- Bearing ①
- Spacer ②
  Refer to the “FRONT WHEEL AND BRAKE DISC” section.



T701032
REAR WHEEL INSTALLATION

Reverse the “REMOVAL” procedure.
Note the following points.

1.Install:
- Brake shoe plate assembly
- Rear wheel assembly

NOTE:
Make sure that the slot in the rear wheel clutch hub damper fits over the tab on the rear wheel clutch hub assembly.

2.Install:
- Rear wheel
- Spacer
- Rear wheel axle
- Rear wheel axle nut — **85 Nm (8.5 m • kg)**

3.Install:
- Tension bar — **16 Nm (1.6 m • kg)**

4.Adjust:
- Brake pedal free play

Brake pedal free play:
20 ~ 30 mm

5.Adjust:
- Drive chain slack

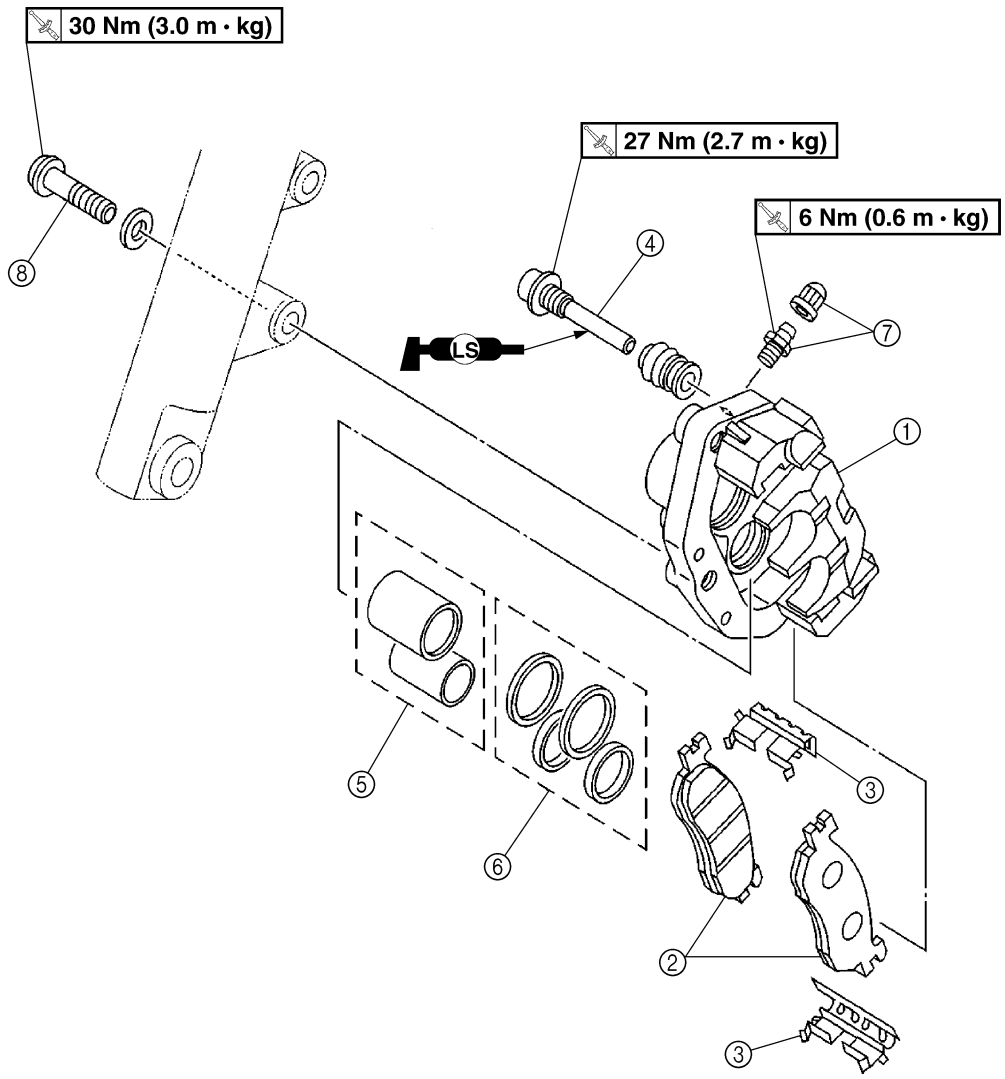
  Refer to the “DRIVE CHAIN SLACK ADJUSTMENT” section in CHAPTER 3.

Drive chain slack:
20 ~ 30 mm

FRONT BRAKE

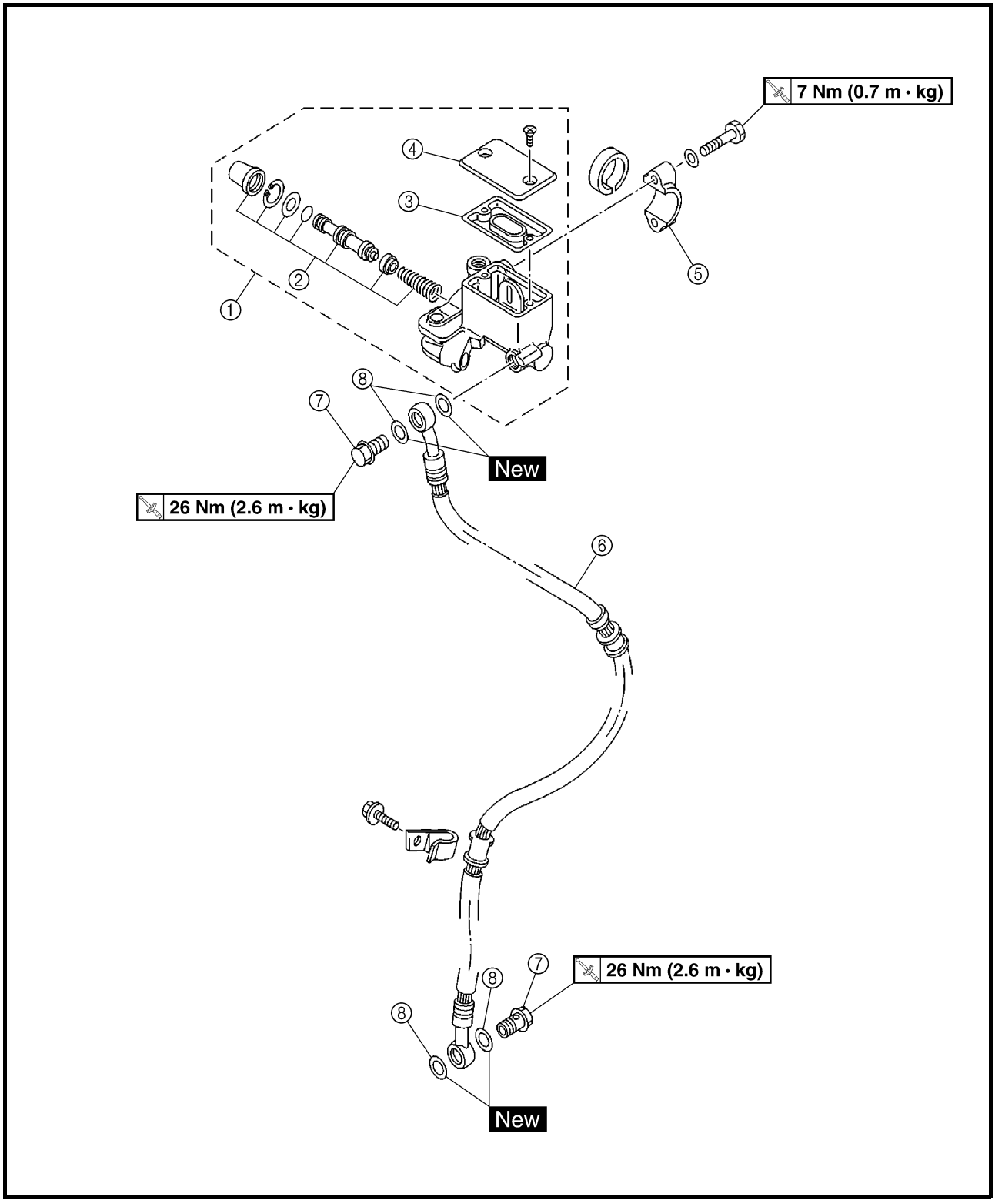
FRONT BRAKE CALIPER

① Brake caliper
② Brake pad
③ Brake pad spring
④ Retaining bolt
⑤ Brake caliper piston
⑥ Brake caliper piston seal
⑦ Bleed screw kit
⑧ Brake caliper bolt



MASTER CYLINDER

① Brake master cylinder
② Brake master cylinder kit
③ Reservoir diaphragm
④ Reservoir cap
⑤ Master cylinder holder
⑥ Brake hose
⑦ Union bolt
⑧ Copper washer



CAUTION:

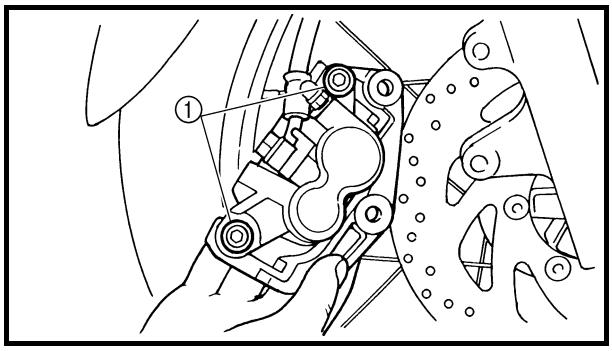
Disc brake components rarely require disassembly. DO NOT:

- **Disassemble components unless absolutely necessary;**
- **Use solvents on internal brake components;**
- **Use spent brake fluid for cleaning; (use only clean brake fluid)**
- **Allow brake fluid to come in contact with the eyes, as this may cause eye injury;**
- **Splash brake fluid onto painted surfaces or plastic parts, as this may cause damage;**
- **Disconnect any hydraulic connection, as this would require the entire brake system to be disassembled, drained, cleaned, properly filled and bled after reassembly.**

BRAKE PAD REPLACEMENT

NOTE:

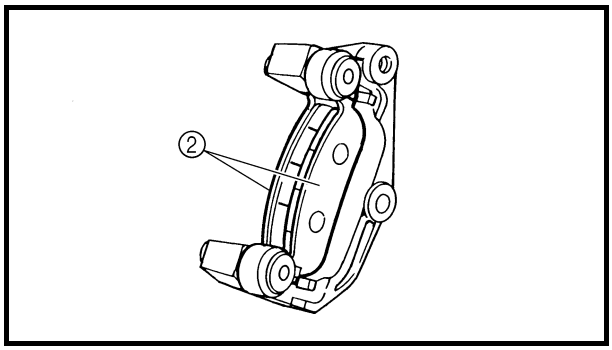
It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.



1.Loosen:
- Retaining bolts

2.Remove:
- Brake caliper bolts
- Brake caliper

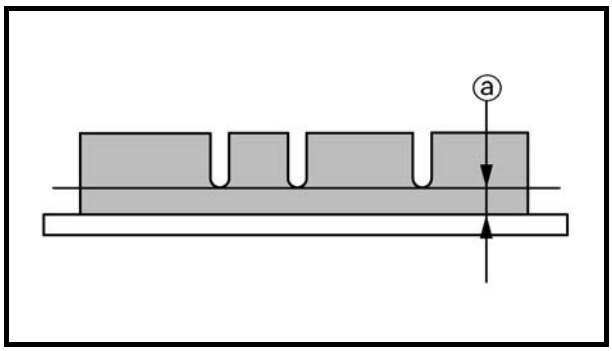
3.Remove:
- Retaining bolts ①
- Brake pads ②



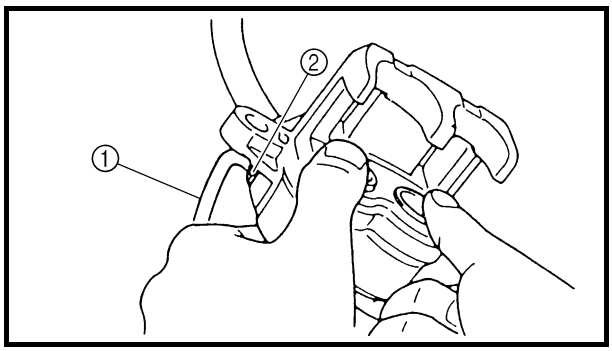
NOTE:

- Install new brake pad springs when the brake pads have to be replaced.
- Replace the brake pads as a set if either is found to be worn to the wear limit.

4.Measure:
- Brake pad wear limit ⓐ
  Out of specification → Replace the brake pads as a set.



Brake pad wear limit:
0.8 mm



5.Install:
- Brake pads
- Brake pads springs

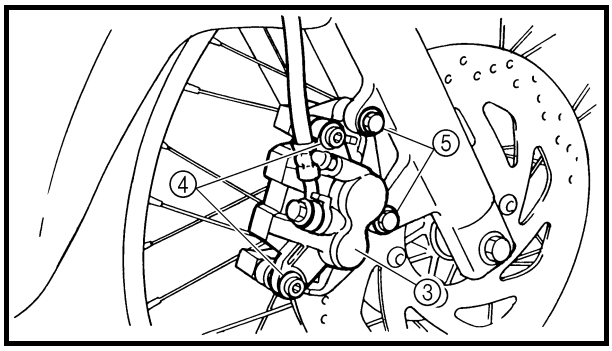
****

Installation steps:

- Connect a suitable hose ① tightly to the brake caliper bleed screw ②. Put the other end of this hose into an open container.
- Loosen the brake caliper bleed screw and using a finger push the caliper pistons into the brake caliper.
- Tighten the brake caliper bleed screw.

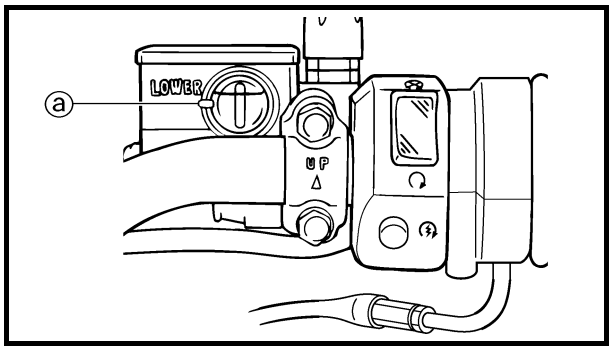
Brake caliper bleed screw:
6 Nm (0.6 m • kg)

- Install new brake pad springs and a new brake pads.
- Install the brake caliper ③ and retaining bolts ④/brake caliper bolts ⑤.



Retaining bolt:
27 Nm (2.7m • kg)
Brake caliper bolt:
30 Nm (3.0 m • kg)

****



6.Inspect:
- Brake fluid level

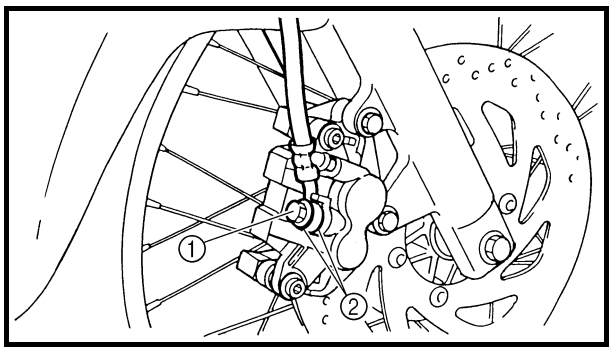
  Refer to the “BRAKE FLUID LEVEL INSPECTION” section in CHAPTER 3.

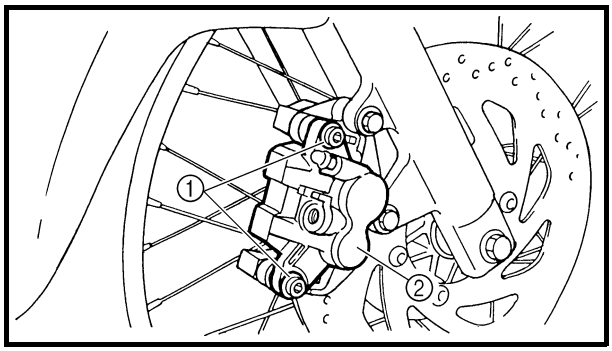
ⓐ “LOWER” level line

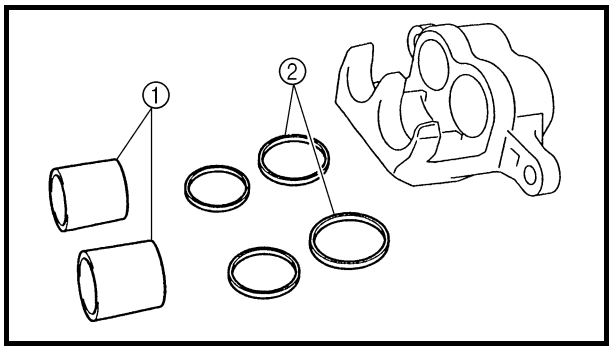
7.Check:
- Brake lever operation

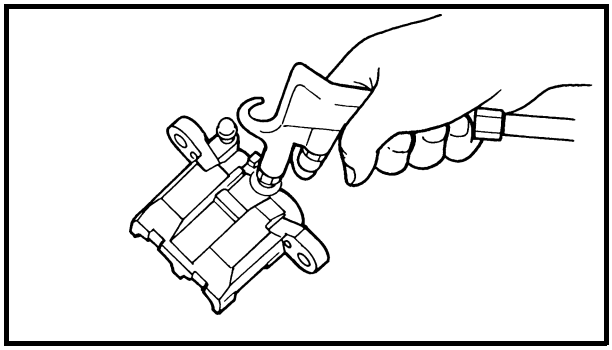
  Soft or spongy feeling → Bleed the brake system.

  Refer to the “AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)” section in CHAPTER 3.









EAS00619
FRONT BRAKE CALIPER REMOVAL

NOTE:
Before disassembling the brake caliper, drain the brake fluid from the entire brake system.

1.Remove:
- Union bolt ①
- Copper washers ②
- Brake hose

NOTE:
Put the end of the brake hose into a container and pump out the brake fluid carefully.

2.Remove:
- Retaining bolts ①
- Brake caliper ②

3.Remove:
- Brake caliper pistons ①
- Brake caliper piston seals ②

****

a.Blow compressed air into the brake hose joint opening to force out the pistons from the brake caliper.

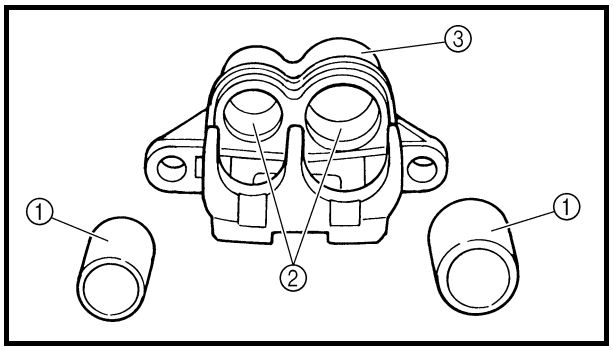
⚠ WARNING
- **Cover the brake caliper pistons with a rag.**
  Be careful not to get injured when the pistons are expelled from the brake caliper.
- **Never try to pry out the brake caliper pistons.**

b.Remove the brake caliper piston seals.

****

EAS00633
FRONT BRAKE CALIPER INSPECTION

Recommended brake component replacement schedule:	
Brake pads	**If necessary**
Piston seals	**Every two years**
Brake hoses	**Every four years**
Brake fluid	**Replace when brakes are disassembled.**



1.Check:
- Brake caliper pistons ①
  Rust/scratches/wear → Replace the brake caliper. Piston assembly.
- Brake caliper cylinders ②
  Scratches/wear → Replace the brake caliper.
- Brake caliper ③
  Cracks/damage → Replace
- Brake fluid delivery passages
  (brake caliper body)
  Obstruction → Blow out with compressed air.

⚠ WARNING

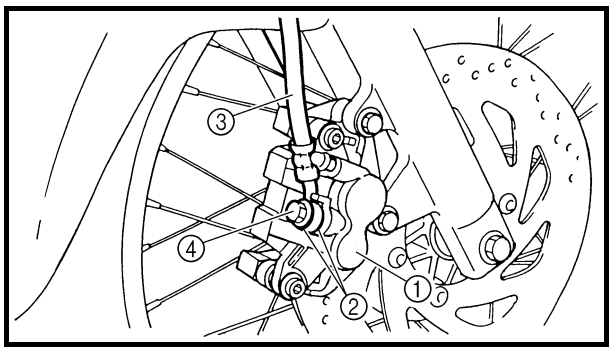
Whenever a brake caliper is disassembled, replace the brake caliper piston seals.

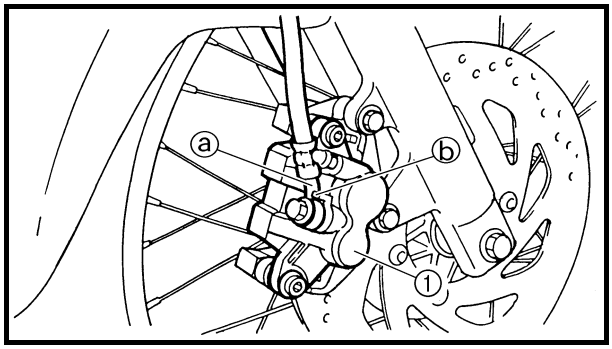
FRONT BRAKE CALIPER INSTALLATION

⚠ WARNING

- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components as they will cause the piston seals to swell and distort.**
- **Whenever a brake caliper is disassembled, replace the brake caliper piston seals.**

Recommended brake fluid:
DOT 3 or 4





1.Install:
- Brake caliper ①
  (temporarily)
- Copper washers New ②
- Brake hose ③
- Union bolt ④ **26 Nm (2.6 m • kg)**

⚠ WARNING

Proper brake hose routing is essential to insure safe motorcycle operation. Refer to the "CABLE ROUTING" section.

CAUTION:

When installing the brake hose onto the brake caliper ①, make sure that the brake pipe ⓐ touches the projection ⓑ on the brake caliper.

2.Install:
- Brake pad springs
- Brake pads
- Brake caliper
- Brake caliper retaining bolt

27 Nm (2.7 m • kg)

3.Fill:
- Brake master cylinder reservoir
  (with the specified amount of the recommended brake fluid)

Recommended brake fluid:
DOT 3 or 4

⚠ WARNING

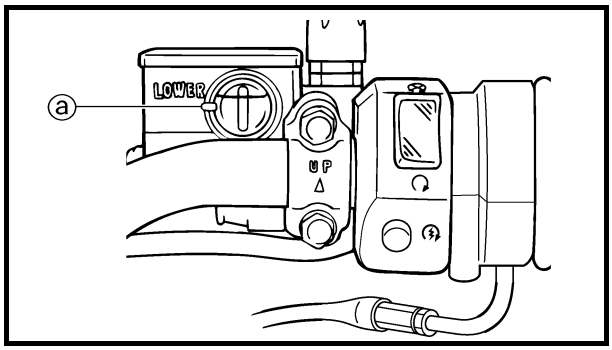
- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**

- **When refilling, be careful that water does not enter the reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

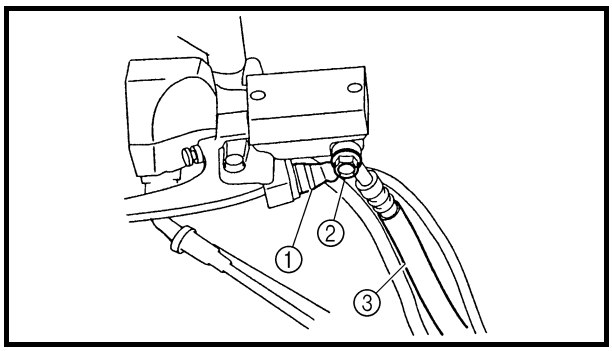
Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

4.Bleed:
- Brake system
  Refer to the “AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)” section in CHAPTER 3.



5.Check:
- Brake fluid level
  Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
  Refer to the “BRAKE FLUID LEVEL INSPECTION” section in CHAPTER 3.

6.Check:
- Brake level operation
  Soft or spongy feeling → Bleed the brake system.
  Refer to the “AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)” section in CHAPTER 3.



EAS00588
MASTER CYLINDER REMOVAL

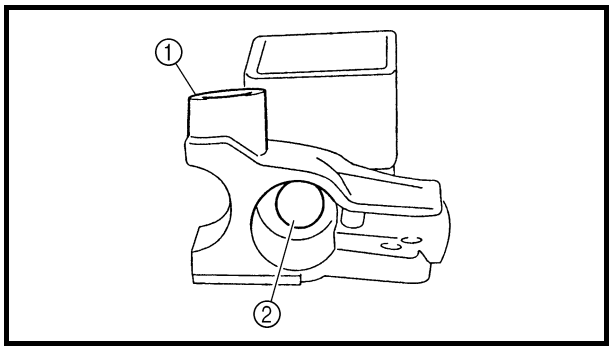
NOTE:
Before removing the front brake master cylinder, drain the brake fluid from the entire brake system.

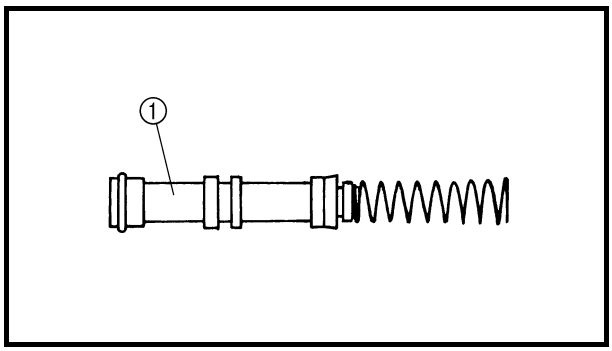
1.Remove:
- Brake lever/compression spring
- Brake switch ①

2.Remove:
- Union bolt ②
- Copper washers
- Brake hose ③

NOTE:
To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.

3.Remove:
- Master cylinder holder
- Brake master cylinder



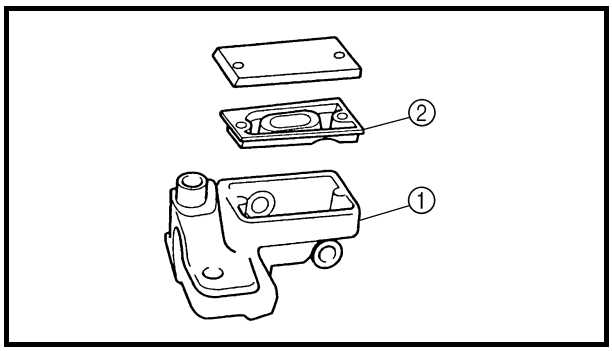


EAS00592
MASTER CYLINDER INSPECTION

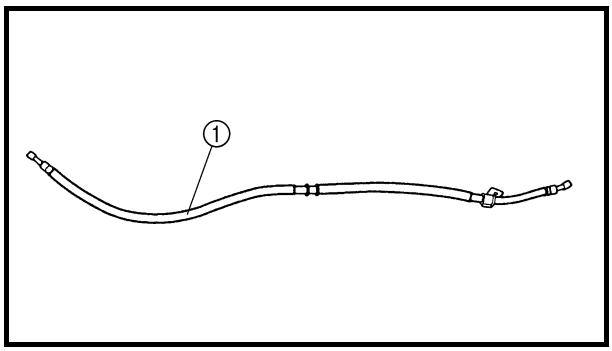
The following procedure applies to the both of the brake master cylinders.

1.Check:
- Brake master cylinder ①
  Damage/scratches/wear → Replace.
- Brake fluid delivery passages ②
  (brake master cylinder body)
  Obstruction → Blow out with compressed air.

2.Check:
- Brake master cylinder kit ①
  Damage/scratches/wear → Replace.



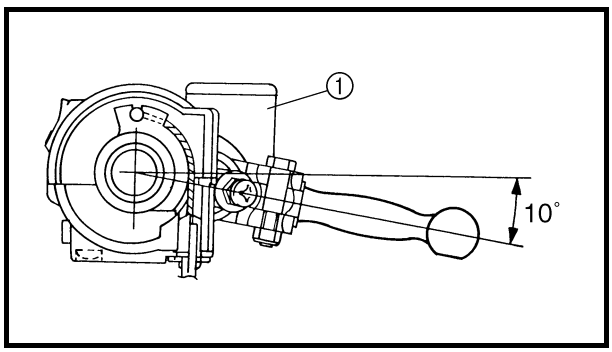
3.Check:
- Brake fluid reservoir ①
  Cracks/damage → Replace.
- Reservoir diaphragm ②
  Cracks/damage → Replace.



4.Check:
- Brake hose ①
  Cracks/damage/wear → Replace.

EAS00598
MASTER CYLINDER INSTALLATION

⚠ WARNING
- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components.**



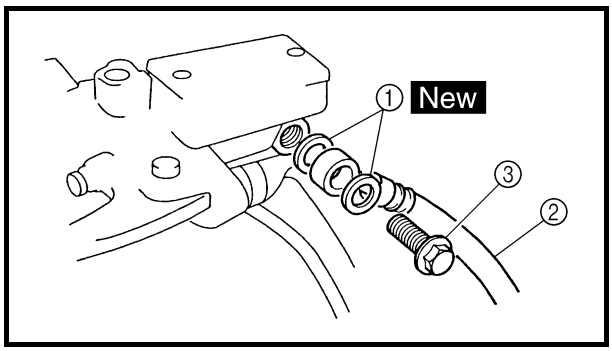
Recommended brake fluid:
DOT 3 or 4

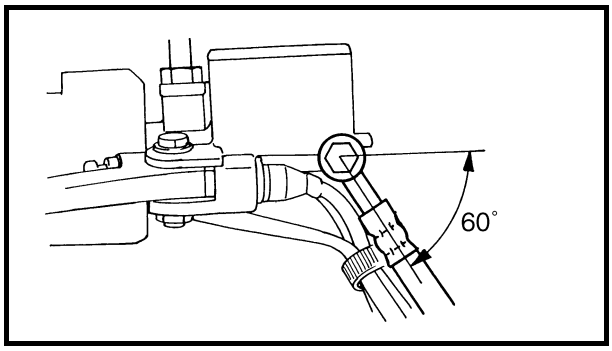
1.Install
- Brake master cylinder ①
- Master cylinder holder

7 Nm (0.7 m • kg)

- Brake lever/compression spring

NOTE:
- Install the master cylinder bracket with the "UP" mark facing up.
- Adjust the brake master cylinder to the proper angle, as shown.
- First, tighten the upper bolt, then the lower bolt.





2.Install:
- Copper washers New ①
- Brake hose ②
- Union bolt ③ **26 Nm (2.6 m • kg)**

⚠ WARNING

Proper brake hose routing is essential to insure safe motorcycle operation. Refer to the "CABLE ROUTING" section.

NOTE:
- While holding the brake hose, tighten the union bolt as shown.
- Turn the handlebar to the left and to the right to make sure that the brake hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.

3.Fill:
- Brake master cylinder reservoir
  (with the specified amount of the recommended brake fluid)

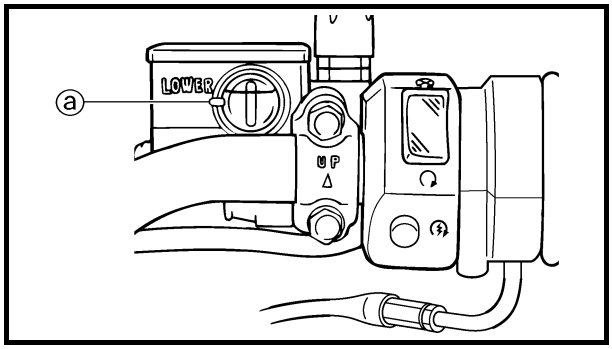
Recommended brake fluid:
DOT 3 or 4

⚠ WARNING
- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

4.Bleed:
- Brake system
  Refer to the “AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)” section in CHAPTER 3.

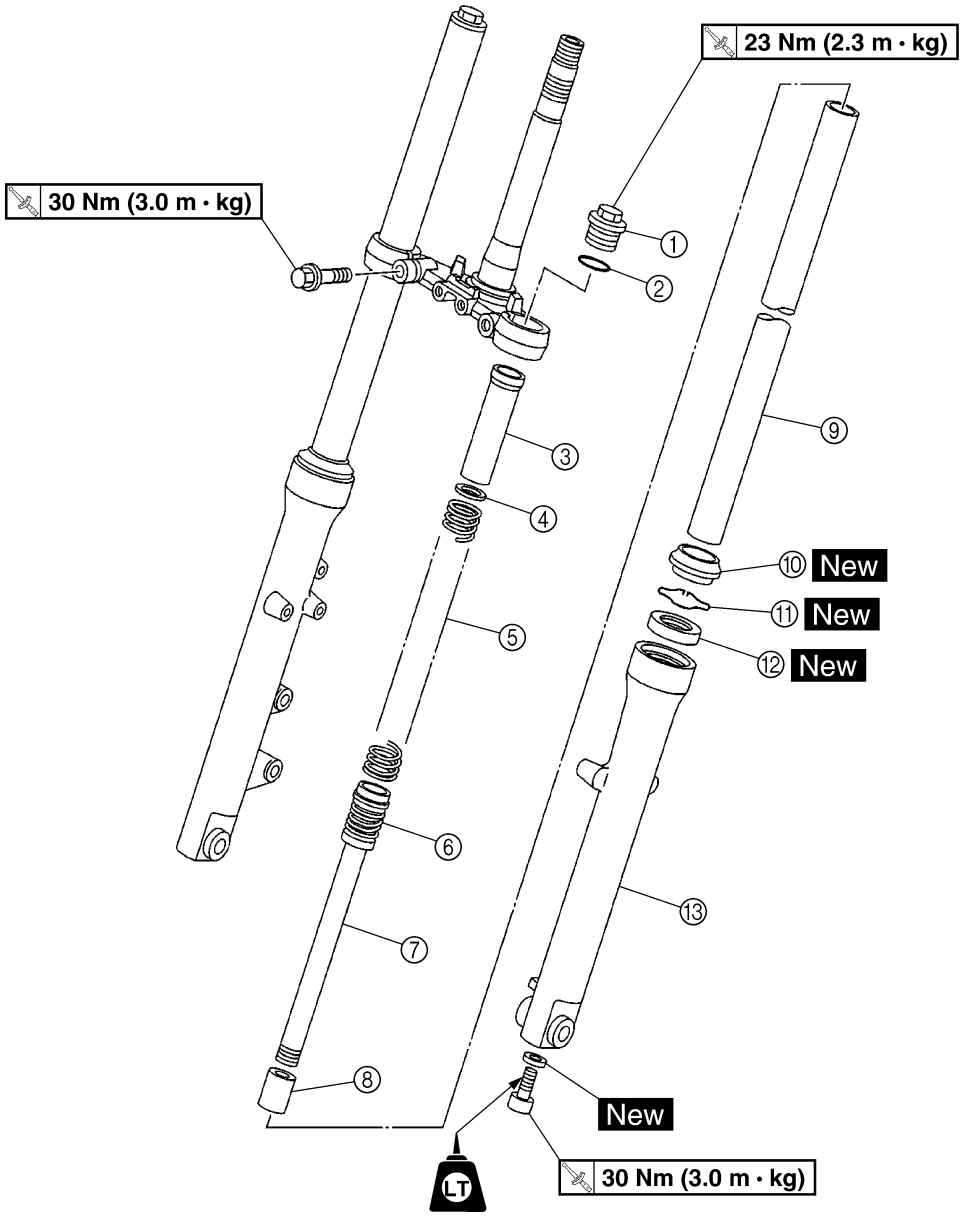


5.Check:
- Brake fluid level
  Below the minimum level mark ⓐ → Add the recommended brake fluid to the proper level.
  Refer to the “BRAKE FLUID LEVEL INSPECTION” section in CHAPTER 3.

6.Check:
- Brake lever operation
  Soft of spongy feeling → Bleed the brake system.
  Refer to the “AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)” section in CHAPTER 3.

FRONT FORK

① Cap bolt
② O-ring
③ Spacer
④ Spring seat
⑤ Fork spring
⑥ Rebound spring
⑦ Damper rod
⑧ Oil lock piece
⑨ Inner tube
⑩ Dust seal
⑪ Oil seal clip
⑫ Oil seal
⑬ Outer tube



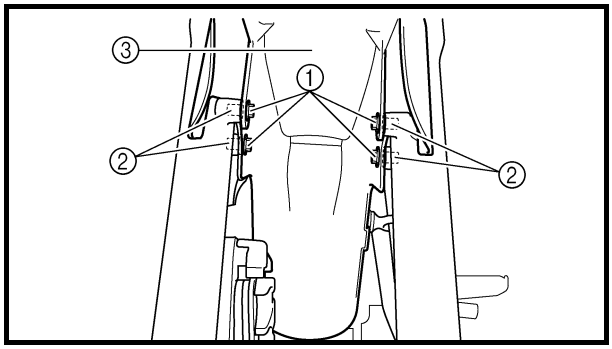
EAS00649
FRONT FORK REMOVAL

The following procedure applies to both of the front fork legs.

1.Stand the motorcycle on a level surface.

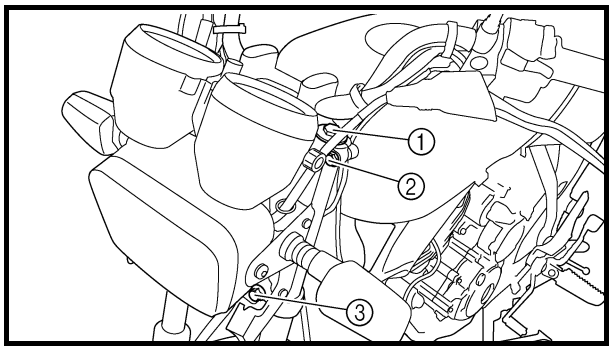
⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.



2.Remove:
- Front wheel
  Refer to the “FRONT WHEEL AND BRAKE DISC” section.

3.Remove:
- Bolts ① (front fender)
- Collars ②
- Front fender ③



4.Loosen:
- Cap bolt ①
- Handle crown pinch bolt ②
- Lower bracket pinch bolt ③

⚠ WARNING

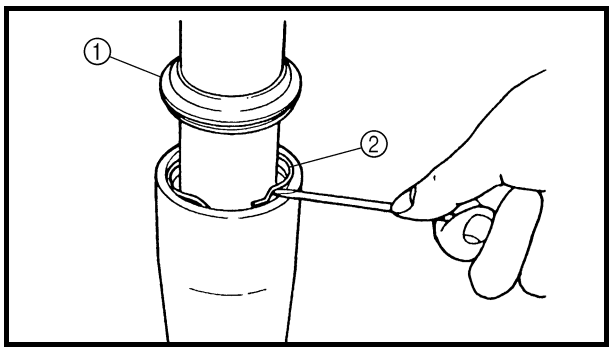
Before loosening the upper and lower bracket pinch bolts, support the front fork leg.

5.Remove:
- Front fork leg

FRONT FORK DISASSEMBLY

The following procedure applies to both of the front fork legs.

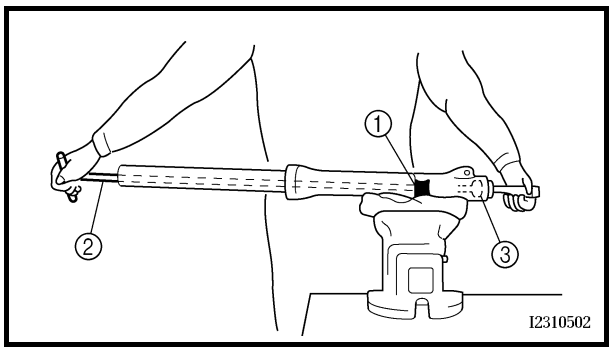
1.Remove:
- Cap bolt
- O-ring
- Spacer
- Spring seat
- Fork spring



2.Drain:
- Fork oil

3.Remove:
- Dust seal ①
- Oil seal clip ② (with a flat-head screwdriver)

CAUTION:
Do not scratch the inner tube.



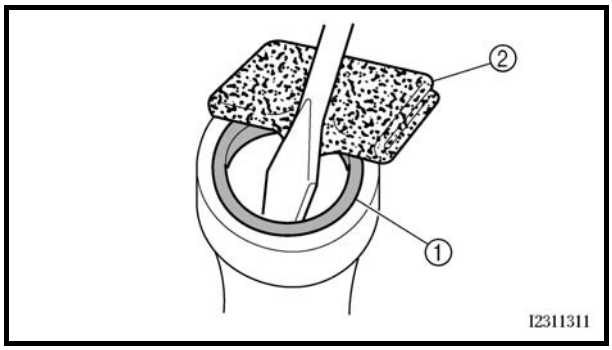
4.Remove:
- Damper rob bolt
- Copper washer

NOTE:
While holding the damper rod with the damper rod holder ① and T-handle ②, loosen the damper rod bolt ③.

Damper rod holder (19mm):
90890-04084
T-Handle:
90890-01326

5.Remove:
- Inner tube
- Damper rod

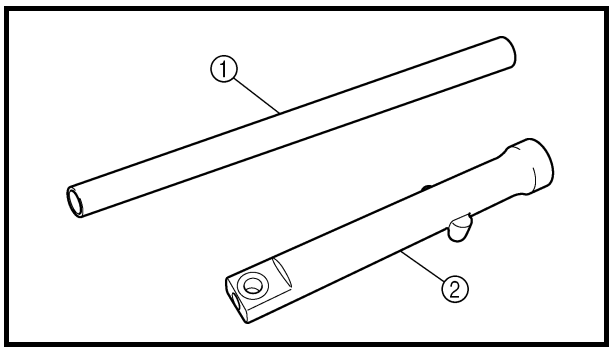
Pull out the inner tube with damper rod.

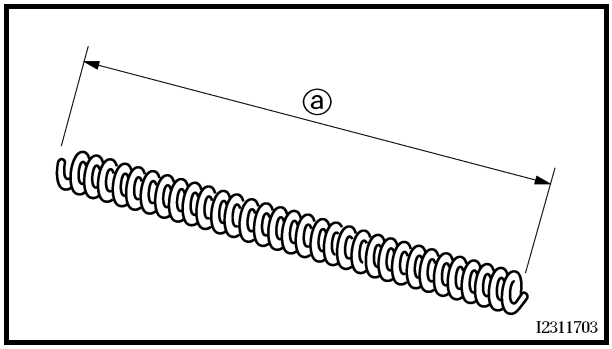


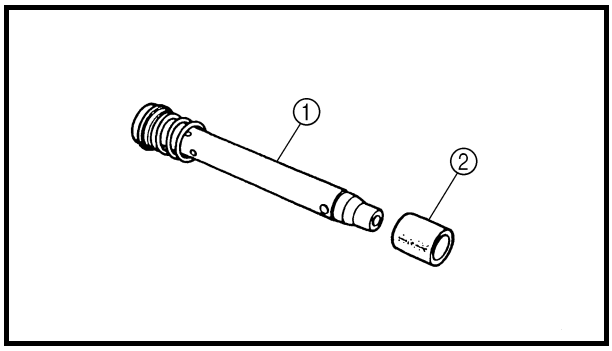
6.Remove:
- Oil seal ①

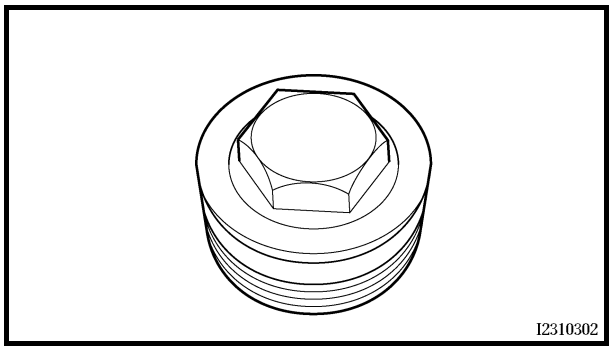
CAUTION:
Never reuse the oil seal.

② Rag









EAS00657
FRONT FORK INSPECTION

The following procedure applies to both of the front fork legs.

1.Check:
- Inner tube ①
- Outer tube ②
  Bends/damage/scratches → Replace.

⚠ WARNING

Do not attempt to straighten a bent inner tube as this may dangerously weaken it.

2.Measure:
- Spring free length ⓐ
  Over the specified limit → Replace.

Spring free length limit:
384 mm

3.Check:
- Damper rod ①
  Damage/wear → Replace.
  Obstruction → Blow out all of the oil passages with compressed air.
- Oil lock piece ②
  Damage → Replace.

CAUTION:

When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.

4.Check:
- Cap bolt O-ring
  Damage/wear → Replace.

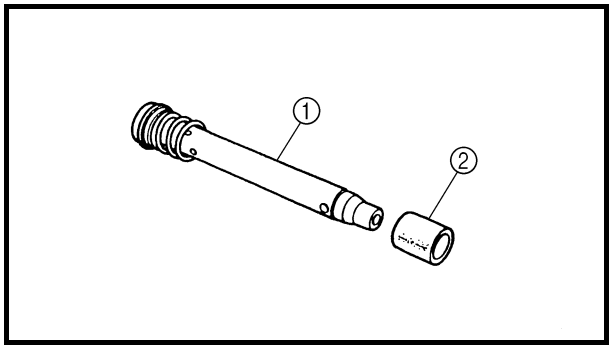
EAS00659
FRONT FORK ASSEMBLY

The following procedure applies to both of the front fork legs.

⚠ WARNING

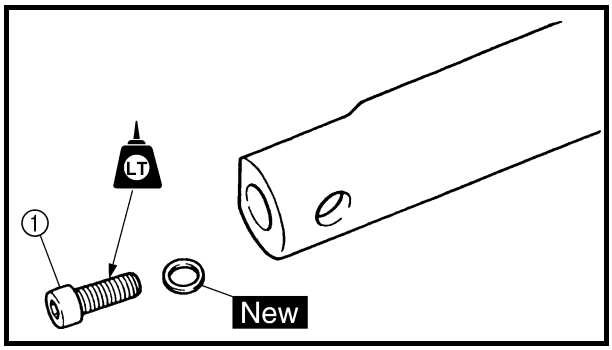
- **Make sure that the oil levels in both front fork legs are equal.**
- **Uneven oil level can result in poor handling and a loss of stability.**

NOTE:
- When assembling the front fork leg, be sure to replace the following parts:
  -oil seal
  -dust seal
- Before assembling the front fork leg, make sure that all of the components are clean.



1.Install:
- Damper rod ①
- Oil lock piece ②

CAUTION:
Allow the damper rod to slide slowly down the inner tube until it protrudes from the bottom of the inner tube. Be careful not to damage the inner tube.

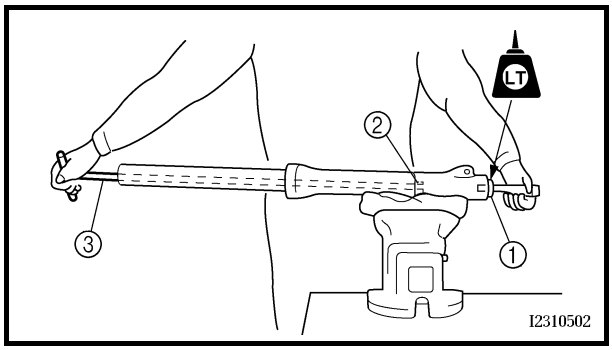


2.Lubricate:
- Inner tube's outer surface

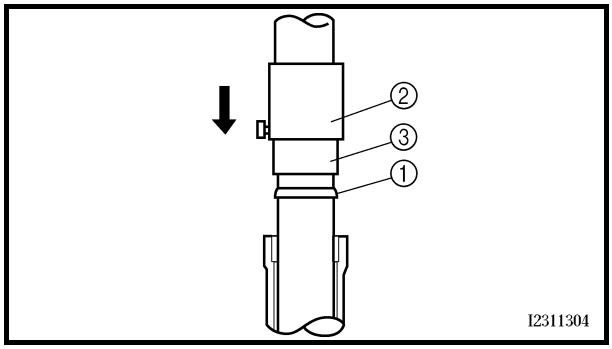
Recommended lubricant:
Fork oil 10 W or equivalent

3.Tighten:
- Damper rod bolt ① **30 Nm (3.0 m • kg)**

NOTE:
While holding the damper rod with the damper rod holder ② and T-handle ③, tighten the damper rod bolt ①.



Damper rod holder (19 mm):
90890-04084
T-handle:
90890-01326



4.Install:
- Oil seal ①
  (with the fork seal driver weight and adapter)

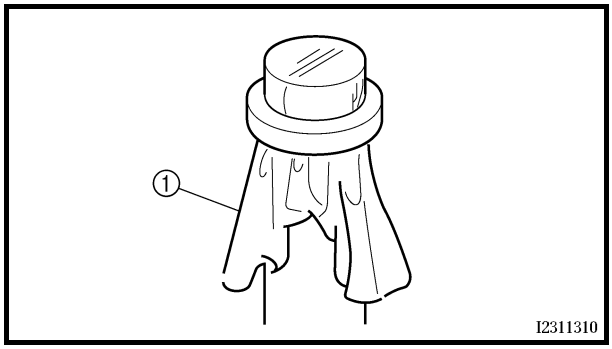
Fork seal driver weight ②:
90890-01367
Fork seal driver attachment (ø33) ③:
90890-01368

CAUTION:

Make sure that the numbered side of the oil seal faces up.

NOTE:

- Before installing the oil seal, apply lithium soap base grease onto its lips.
- Apply fork oil onto the outer surface of the inner tube.
- Before installing the oil seal, cover the top of the front fork leg with a plastic bag ① to protect the oil seal during installation.

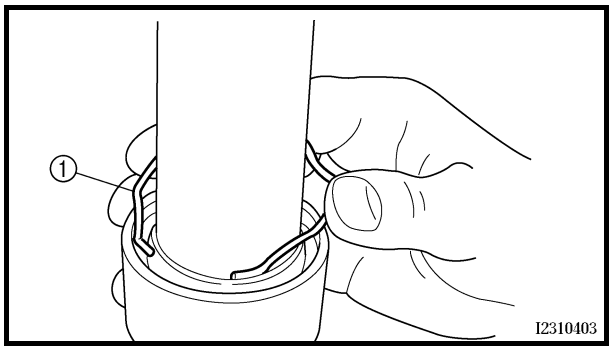


5.Install:

- Oil seal clip ①

NOTE:

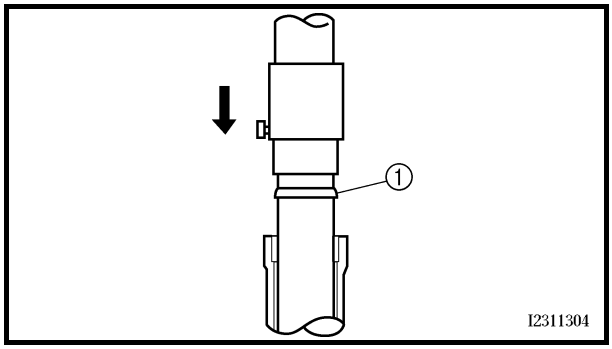
Adjust the oil seal clip so that it fits into the outer tube's groove.



6.Install:

- Dust seal ①
  (with the fork seal driver weight)

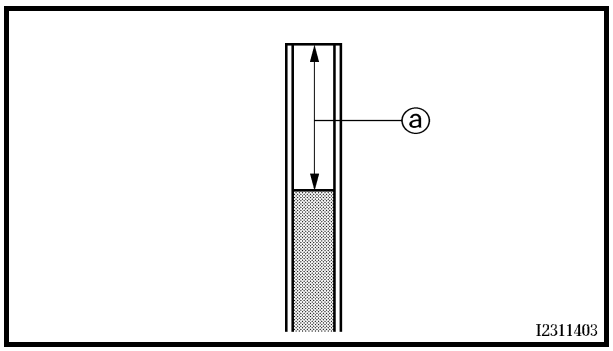
Fork seal driver weight:
90890-01367
Front fork seal driver attachment (ø33):
90890-01368

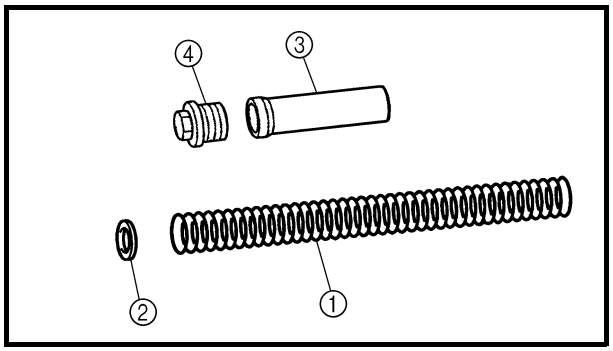


7.Fill

- Front fork leg
  (with the specified amount of the recommend fork oil)

Quantity (each front fork leg):
252 cm³
Yamaha fork and shock oil
10 W or equivalent.





Front fork leg oil level ⓐ (from the top of the inner tube, with the inner tube fully compressed and without the fork spring):
95 mm

NOTE:
- While filling the front fork leg, keep it upright.
- After filling, slowly pump the front fork leg up and down to distribute the fork oil.
- Be sure to stroke the inner tube slowly because the for oil may spurt out.

8.Install:
- Spring ①
- Spring seat ②
- Spacer ③
- Cap bolt ④

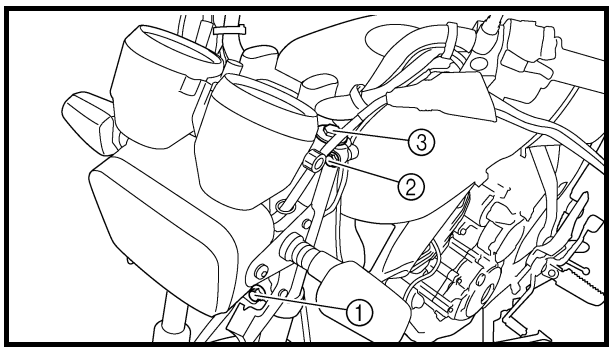
NOTE:
- Install the spring with the smaller pitch facing up.
- Before installing the cap bolt, apply grease onto the O-ring.
- Temporarily tighten the cap bolt.

EAS00662
FRONT FORK INSTALLATION

The following procedure applies to both of the front fork legs.

1.Install:
- Front fork leg
  Temporarily tighten the handle crown pinch bolt and lower bracket pinch bolt.

NOTE:
Make sure that the inner fork tube is flush with the top of the handlebar holder.



2.Tighten:
- Lower bracket pinch bolt ①
  30 Nm (3.0 m • kg)
- Handle crown pinch bolt ②
  23 Nm (2.3 m • kg)
- Cap bolt ③
  23 Nm (2.3 m • kg)

⚠ WARNING

Make sure that the brake hoses are routed properly.

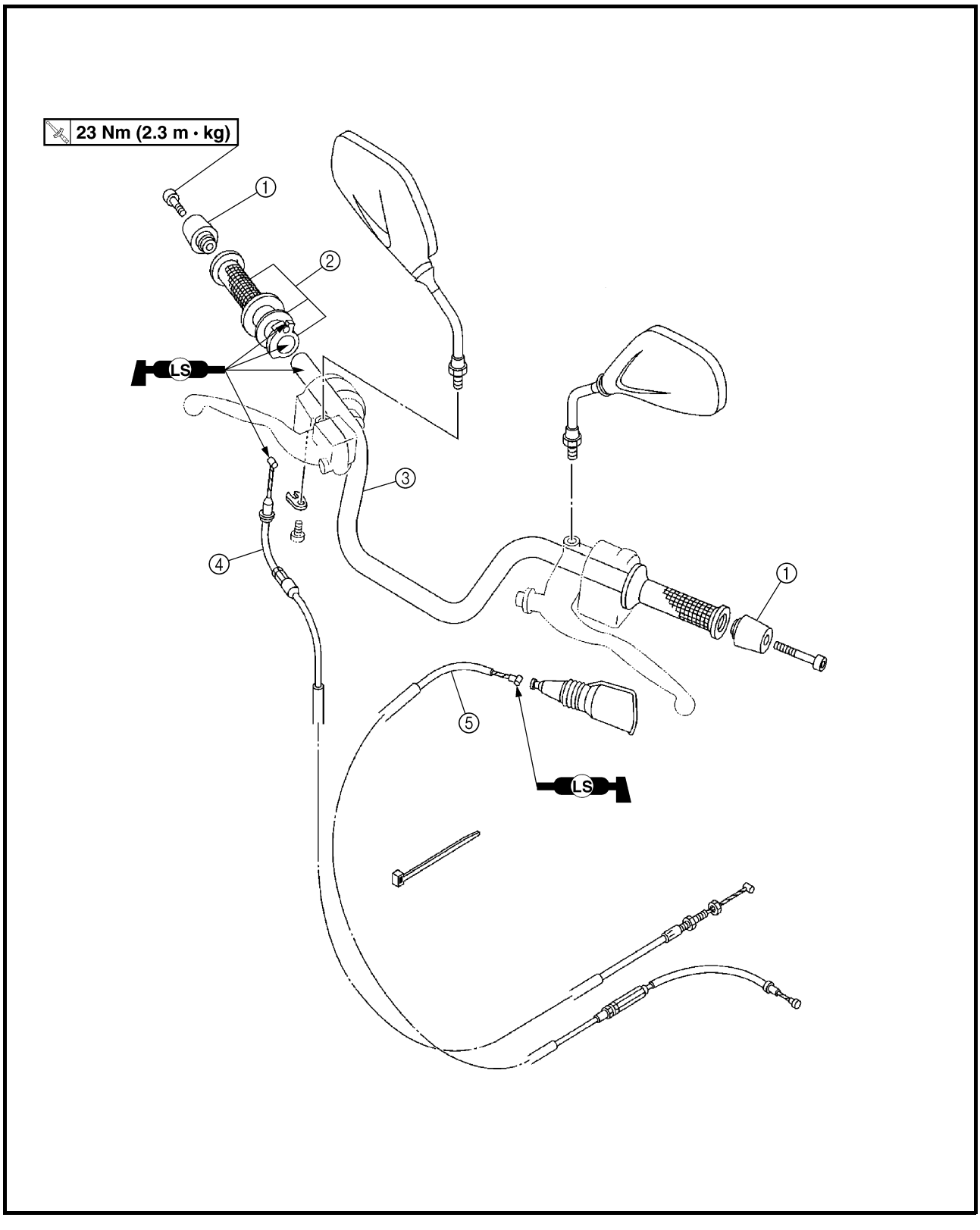
3.Install:
- Front fender
- Collars
- Bolts (front fender)
  7 Nm (0.7 m • kg)

4.Install:
- Front wheel
  Refer to the “FRONT WHEEL AND BRAKE DISC” section.

STEERING HEAD AND HANDLEBAR

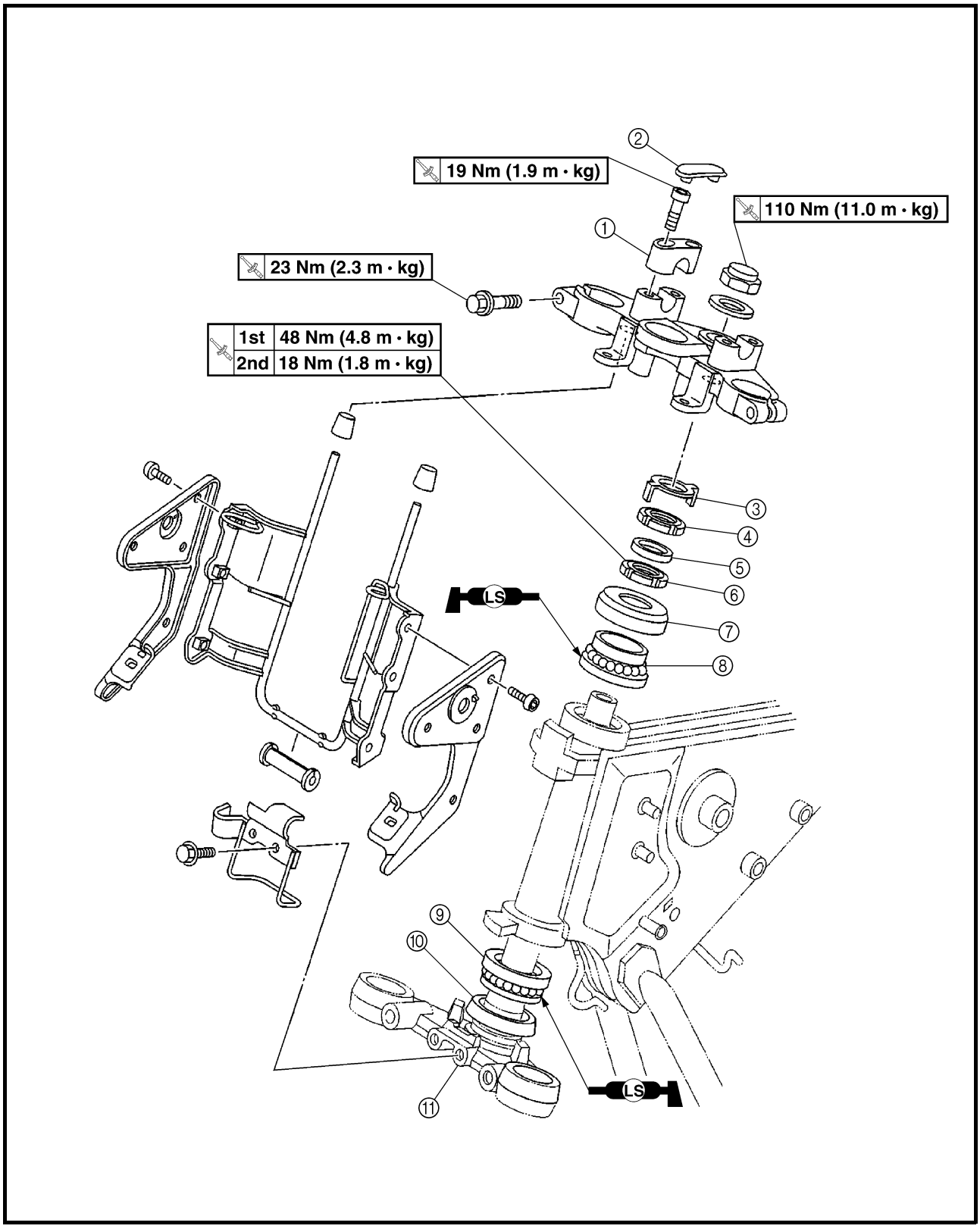
HANDLEBAR

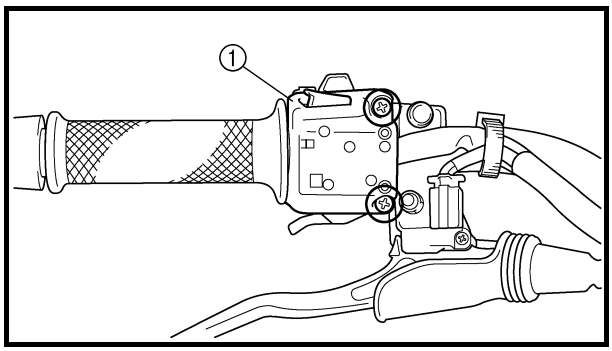
① Grip end
② Throttle grip
③ Handlebar
④ Throttle cable
⑤ Clutch cable



STEERING HEAD

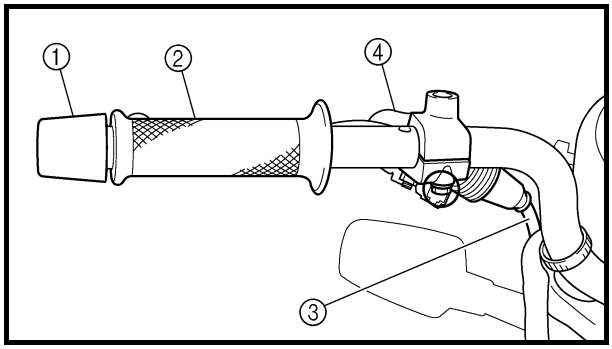
① Handlebar holder
② Bolt cap
③ Lock washer
④ Upper ring nut
⑤ Rubber washer
⑥ Lower ring nut
⑦ Ball race cover
⑧ Bearing
⑨ Bearing
⑩ Bearing race
⑪ Lower bracket





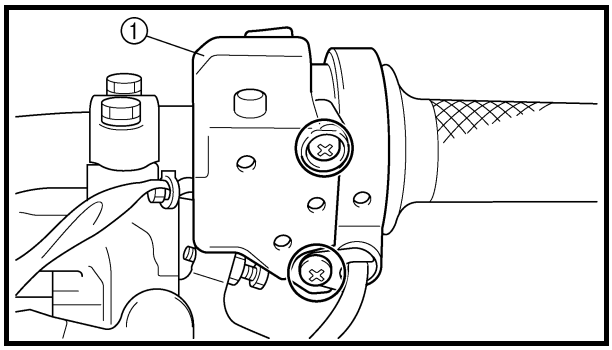
HANDLEBAR REMOVAL

1.Remove:
- Handlebar switch ① (left)

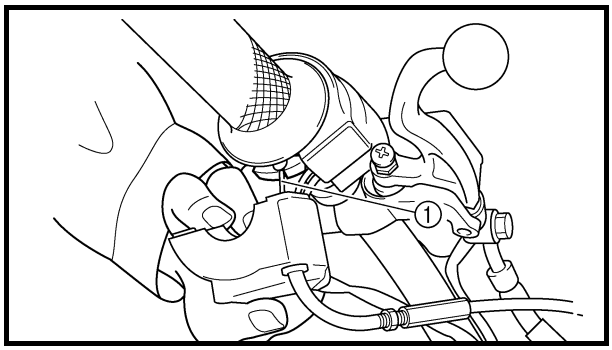


2.Remove:
- Grip end ① (left)
- Handlebar grip ② (left)
- Clutch cable ③
- Clutch lever holder ④

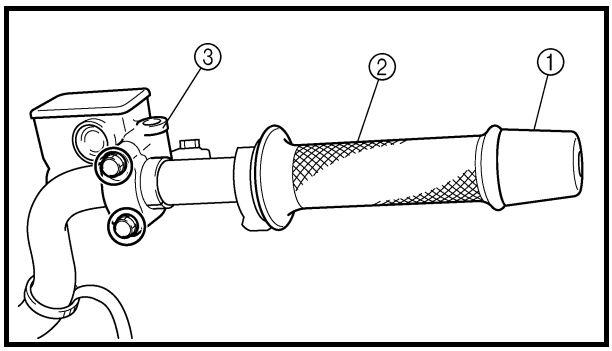
NOTE:
Before removing the clutch lever holder ④, remove the clutch switch leads and clutch cable.



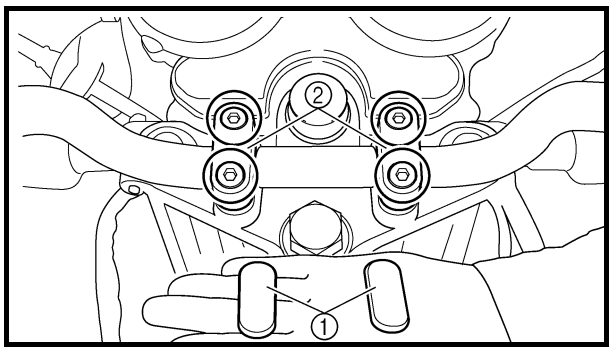
3.Remove:
- Handlebar switch ① (right)



4.Remove:
- Throttle cable ①



5.Remove:
- Grip end ① (right)
- Throttle grip ②
- Brake lever holder ③



6.Remove:
- Bolt cap ①
- Handlebar holders ②

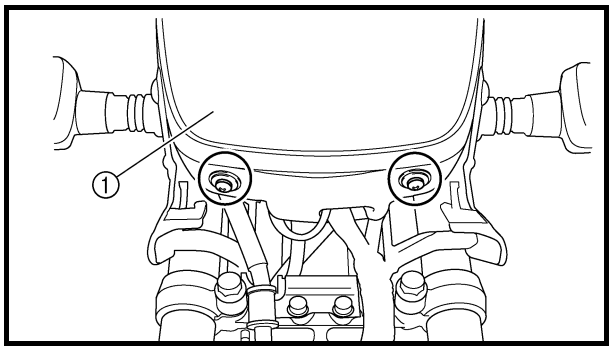
7.Remove:
- Handlebar

STEERING HEAD REMOVAL

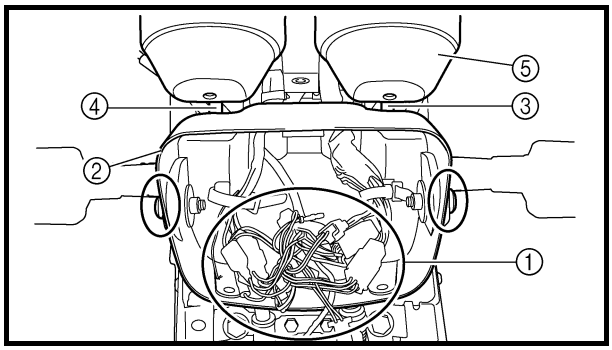
⚠ WARNING

Securely support the motorcycle so there is no danger of its falling over.

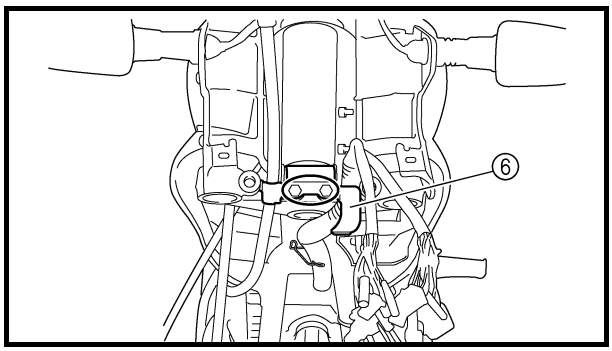
1.Place the motorcycle on the centerstand and place a suitable stand under the engine to elevate the front wheel.



2.Remove:
- Handlebar
- Headlight unit ①



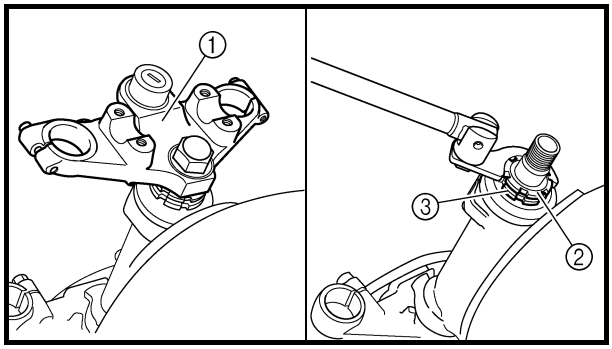
3.Remove:
- Leads ①
- Headlight body ②
- Speedometer cable ③
- Tachometer cable ④
- Speedometer assembly ⑤
- Holder ⑥



4.Remove:
- Front wheel
- Front fork

Refer to the “FRONT WHEEL AND FRONT FORK REMOVAL” section.

NOTE:
It is not necessary to remove the cap bolts when removing front fork.



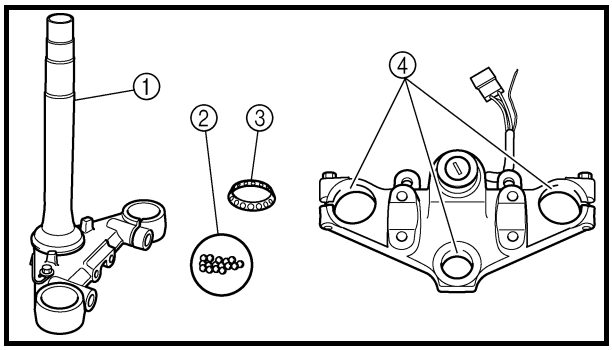
5.Remove:
- Handle crown ①
- Upper ring nut ②
- Rubber washer
- Lower ring nut ③

Use the steering nut wrench to remove the upper ring nut and lower ring nut.

	Steering nut wrench: 90890-01403

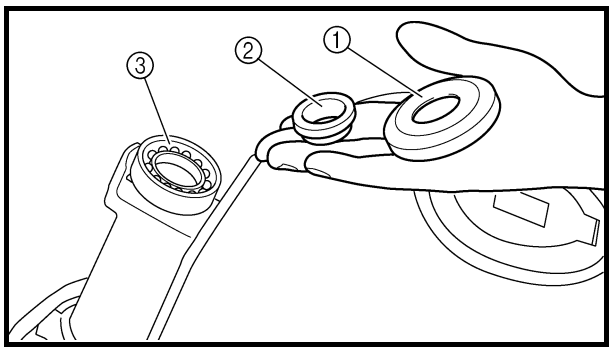
- Lower bracket

⚠ WARNING
Support the lower bracket so that it may not fall down.



STEERING HEAD AND HANDLEBAR INSPECTION

1.Wash the bearing race and ball with solvent.
2.Inspect:
- Lower bracket ①
- Bearings ②
- Bearing races ③
- Inner surface ④ (handle crown)
  Scratches/damage → Replace.



3.Remove:
- Ball race cover ①
- Bearing race ②
- Bearing ③

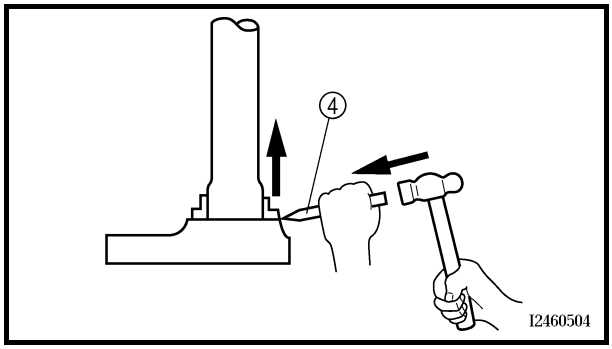
****

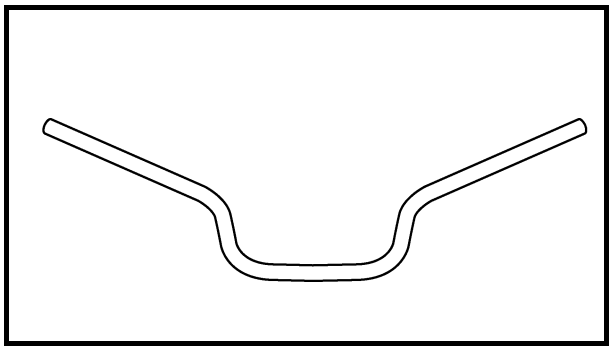
Bearing race replacement steps:

- Remove the bearing race on the lower bracket using the floor chisel ④ and the hammer as shown.
- Install the new bearing races.

****

NOTE:
Always replace bearings and races as a set.





4.Inspect:
- Handlebar
  Bends/damage → Replace.

STEERING HEAD INSTALLATION

Reverse the “REMOVAL” procedures.
Note the following points:

1.Lubricate:
- Bearing (upper/lower)
- Bearing race

	Lithium-soap base grease

2.Install:
- Bearing (lower)
  Onto the bearing race.
- Lower bracket

⚠ WARNING

Support the lower bracket until it is secured.

- Bearing (upper)
- Bearing race (upper)
- Bearing race cover
- Ring nuts

3.Tighten:
- Ring nut
  Refer to the “STEERING HEAD INSPECTION” section in CHAPTER 3.

4.Install:
- Holder
  Pass the brake cable and wire harness through the holder.

5.Install:
- Front fork leg
  Temporarily tighten the upper and lower bracket pinch bolts.

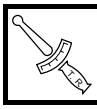
6.Install:
- Handle crown

Nut (steering stem):
110 Nm (11.0 m • kg)

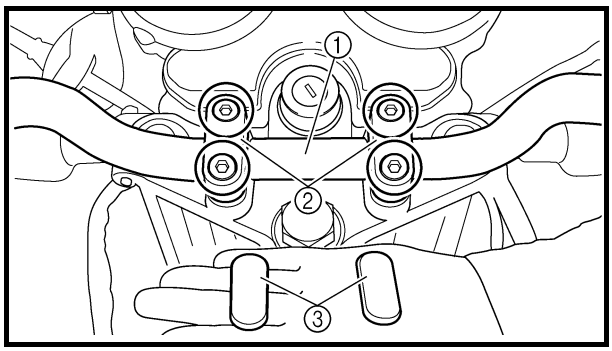
7.Install:
- Front fork
  Refer to the “FRONT FORK” section.

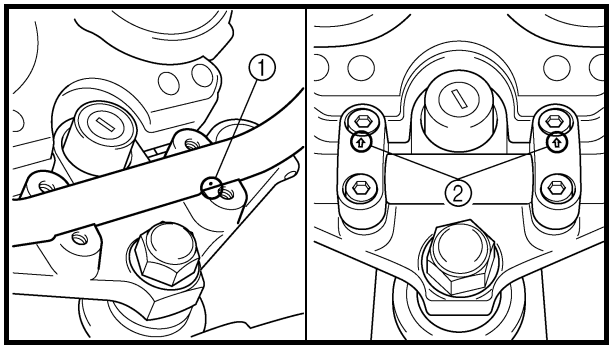
Pinch bolt (lower bracket):
30 Nm (3.0 m • kg)
Pinch bolt (handle crown):
23 Nm (2.3 m • kg)

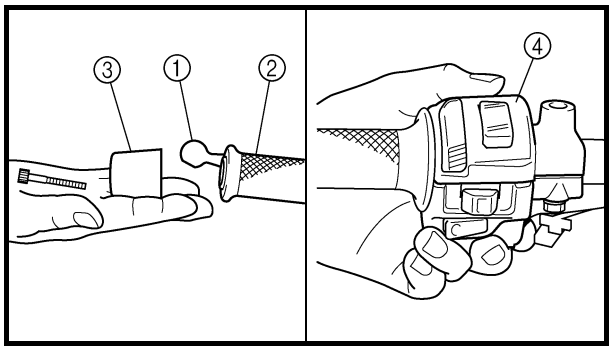
8.Install:
- Front wheel
  Refer to the “FRONT WHEEL AND BRAKE DISC” section.

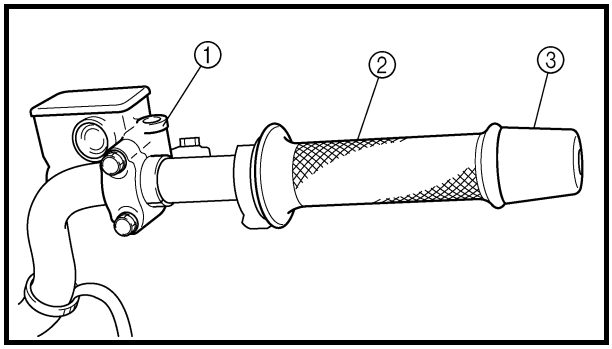


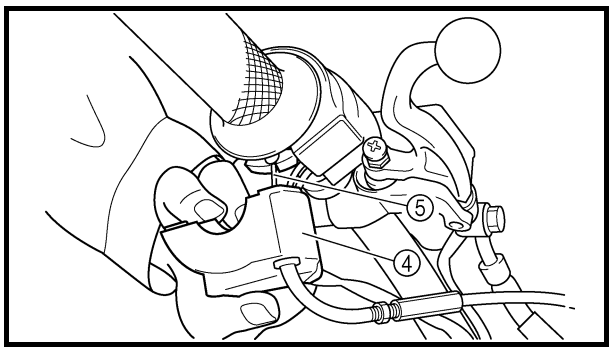
Nut (front wheel axle):
58 Nm (5.8 m • kg)











HANDLEBAR INSTALLATION

1.Install:
- Speedometer assembly
- Handlebar ①
- Handlebar holders ②
- Bolt cap ③

NOTE:
- Punch mark ① should be flush with upper bracket when installing the handlebar.
- Arrow marks ② should be pointed toward when installing handlebar holder.

	Bolt (handlebar holder): 19 Nm (1.9 m • kg)

2.Install:
- Clutch lever ①
- Grip ② (left)
- Grip end ③ (left)
- Handlebar switch ④ (left)

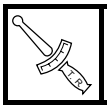
NOTE:
- Align the handlebar switch projection with the hole on the handlebar.
- Apply lithium-soap base grease to clutch cable end when installing left handlebar switch.

3.Install:
- Brake lever holder ①
- Throttle grip ② (right)
- Throttle grip end ③
- Handlebar switch ④ (right)
- Throttle cable ⑤

NOTE:
- Align the handlebar switch projection with the hole on the handlebar.
- Apply lithium-soap base grease to throttle cable end when installing right handlebar switch.

⚠ WARNING

It should have 1 ~ 3 mm when installing throttle grip end.



Bolt (throttle grip end):
23 Nm (2.3 m • kg)

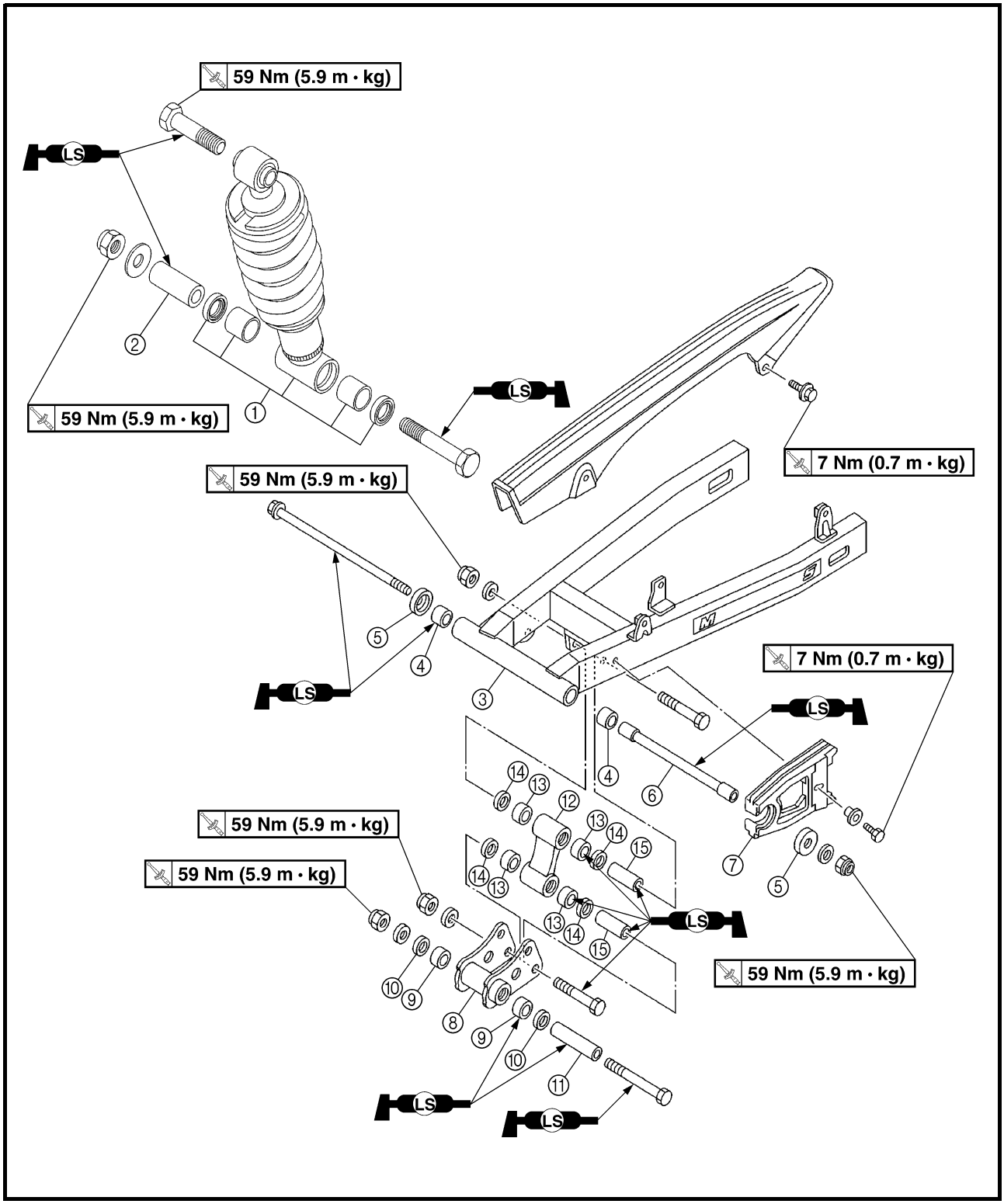
4.Adjust:

- Throttle cable free play
  Refer to the “THROTTLE CABLE FREE PLAY ADJUSTMENT” section in CHAPTER 3.

Throttle cable free play:
3 ~ 5 mm

REAR SHOCK ABSORBER AND SWINGARM

① Rear shock absorber
② Bush
③ Swingarm
④ Bearing
⑤ Dust cover
⑥ Bush
⑦ Drive chain guide
⑧ Relay arm
⑨ Bush
⑩ Oil seal
⑪ Collar
⑫ Connecting arm
⑬ Bush
⑭ Oil seal
⑮ Collar



EAS00703
REAR SHOCK ABSORBER AND SWINGARM REMOVAL

1.Stand the motorcycle on a level surface.

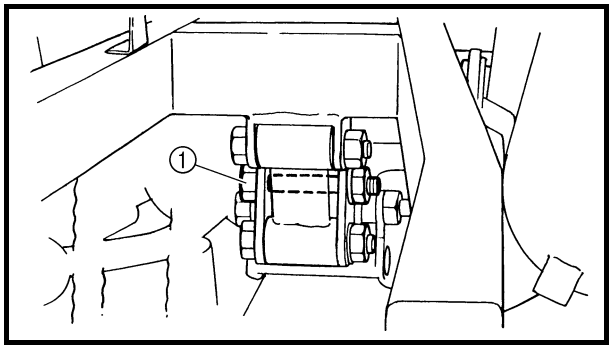
⚠ WARNING

Securely support the motorcycle so that there is no danger of it falling over.

2.Remove:
- Air filter case

  Refer to the “CARBURETOR” section in CHAPTER 5.

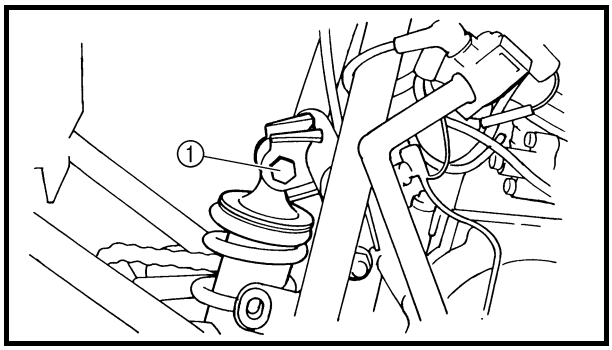
3.Remove:
- Bolt (rear shock absorber) ①



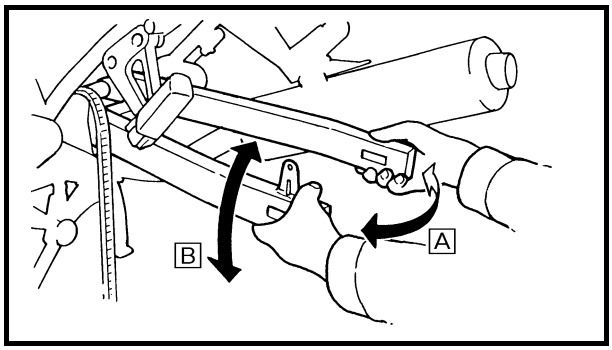
NOTE:

When removing the rear shock absorber lower bolt, hold the swingarm so that it does not drop down.

4.Remove:
- Bolt (rear shock absorber) ①
- Rear shock absorber



5.Check:
- Swingarm side play Ⓐ
- Swingarm vertical movement Ⓑ



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a.Check the tightening torque of the pivot shaft nut.

	Pivot shaft nut: **59 Nm (5.9 m • kg)**

b.Check the swingarm side play Ⓐ by moving the swingarm from side to side.

c.If the swingarm side play is large, check the spacers, bearings, washers, and dust covers.

d.Check the swingarm vertical movement Ⓑ by moving the swingarm up and down.

If swingarm vertical movement is not smooth or if there is binding, check the spacers, bearings, washers, and dust covers.

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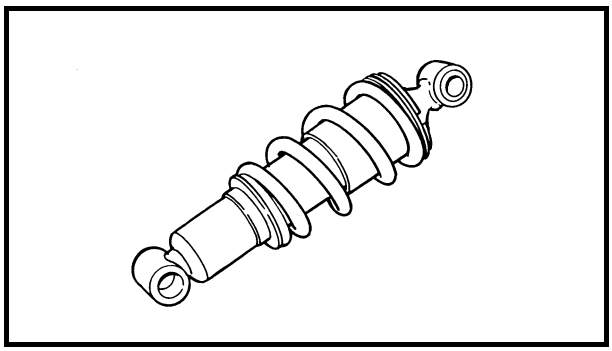
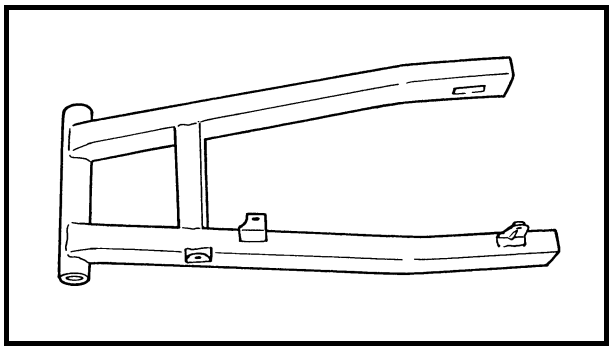


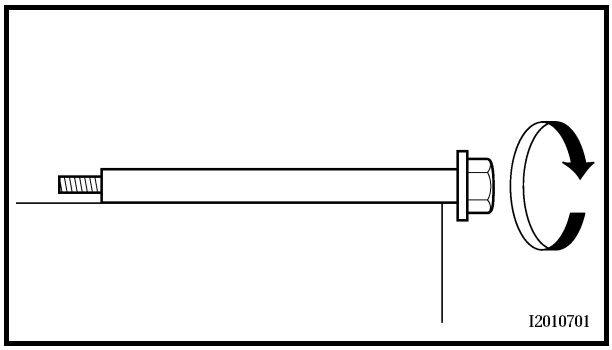
EAS00696
REAR SHOCK ABSORBER INSPECTION

1.Inspect:
- Rear shock absorber rod
  Bends/damage → Replace the rear shock absorber assembly.
- Rear shock absorber
  Gas leaks/oil leaks → replace the rear shock absorber assembly.
- Spring
  Damage/wear → Replace the rear shock absorber assembly.
- Bushings
  Damage/wear → Replace.
- Dust seals
  Damage/wear → Replace.
- Bolts
  Bends/damage/wear → Replace.



EAS00707
SWINGARM INSPECTION

1.Inspect:
- Swingarm
  Bends/cracks/damage → Replace.



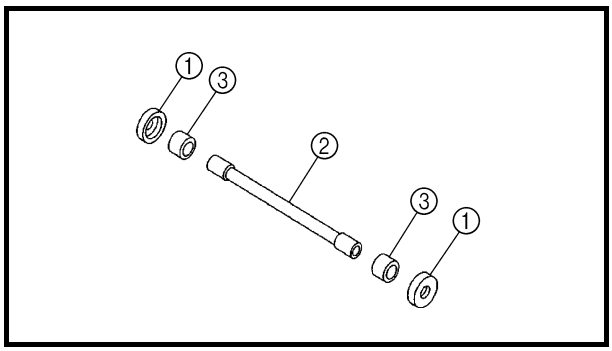
2.Inspect:
- Pivot shaft
  Roll the pivot shaft on a flat surface.
  Bends → Replace.

⚠ WARNING

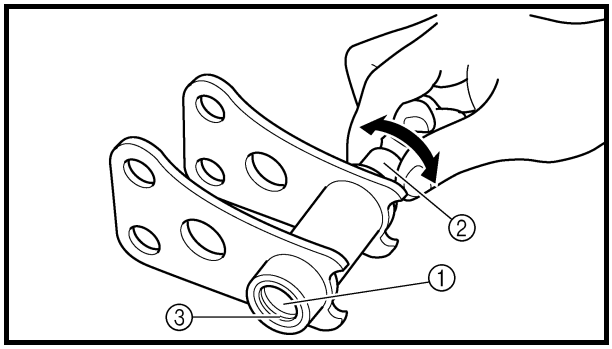
Do not attempt to straighten a bent pivot shaft.

3.Wash:
- Pivot shaft
- Dust covers
- Collars
- Washers
- Bearings
- Bushes

Recommended cleaning solvent
Kerosine

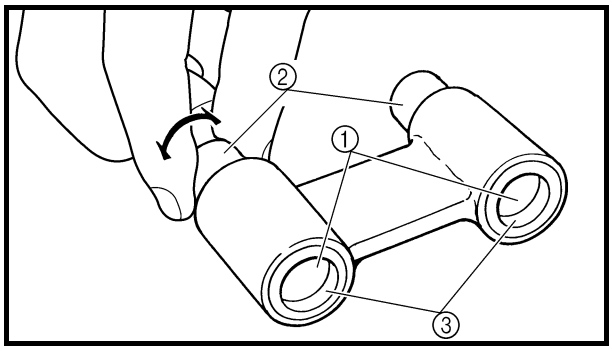


4.Inspect:
- Dust covers ①
- Bush ②
  Damage/wear → Replace.
- Bearings ③
  Damage/pitting → Replace.



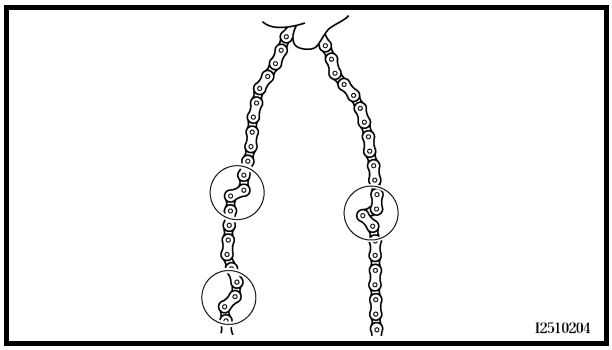
EC574210
RELAY ARM INSPECTION
1.Inspect:
- Bushs ①
- Collar ②
  Free play exists/unsmooth revolution/rust → Replace bush and collar as a set.

2.Inspect:
- Oil seals ③
  Damage → Replace.

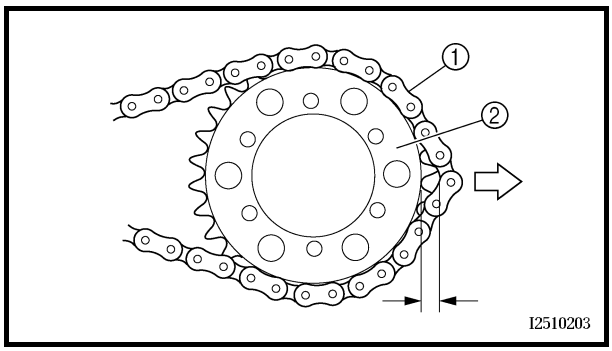


EC574310
CONNECTING ARM INSPECTION
1.Inspect:
- Bushs ①
- Collars ②
  Free play exists/unsmooth revolution/rust → Replace bush and collar as a set.

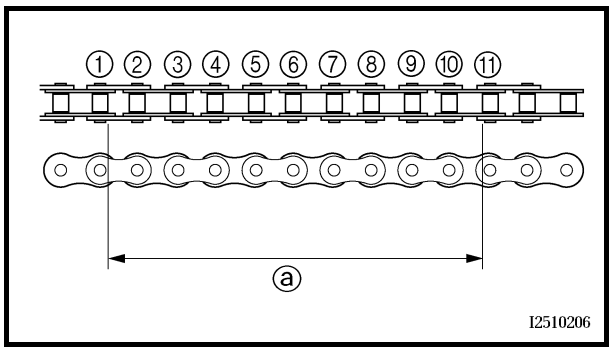
2.Inspect:
- Oil seals ③
  Damage → Replace.



T701020
DRIVE CHAIN INSPECTION
1.Inspect:
- Drive chain stiffness
  Stiffness → Clean and lubricate or replace.



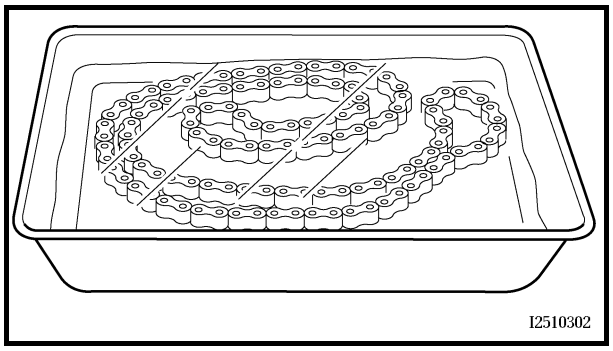
2.Inspect:
- Drive chain ①
- Driven sprocket ②
  More than 1/2 tooth a wear → Replace the drive chain.
  Use new driven sprocket.



3.Measure:
- 10 link length ⓐ (drive chain)
  Out of specification → Replace the drive chain.

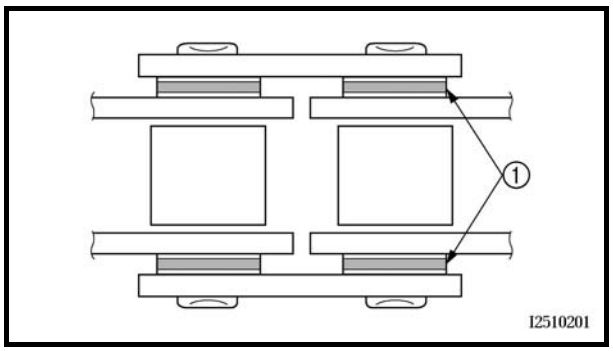
10 link length limit:
119.5 mm

NOTE:
- Tighten the drive chain with a finger before measuring.
- 10 link length is the distance between the inside edge of roller ① and ⑪ as shown.
- 10 link length measurement should be done at two or three different places.

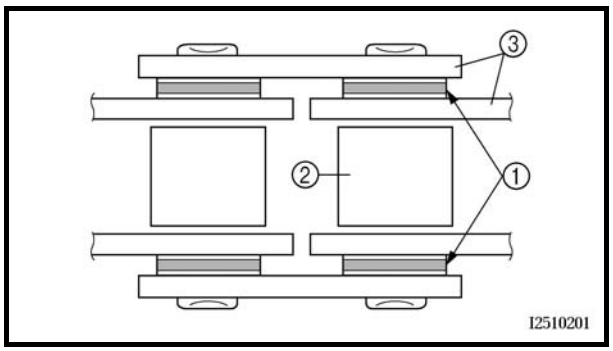


4.Clean:
- Drive chain
  Put it in kerosene, and brush off as much dirt as possible. Then remove the drive chain from the kerosene and dry it.

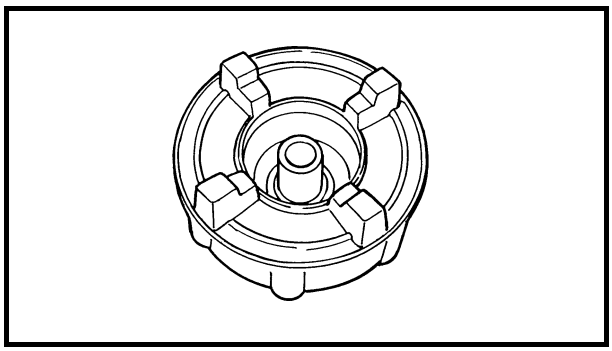
Drive chain lubricant:
Engine oil or chain lubricant for O-ring chain



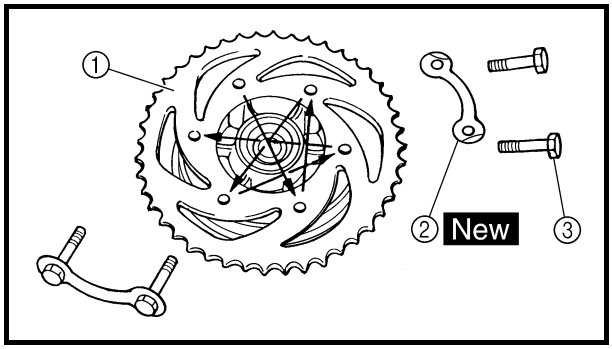
CAUTION:
This motorcycle has a drive chain with small rubber O-rings ① between the drive chain side plates. Never use high-pressure water or air, steam, gasoline, certain solvents (e.g., benzene), or a coarse brush to clean the drive chain.
Don't soak drive drain in kerosine for more than ten minutes. O-ring is damage by kerosine.



5.Check:
- O-rings ①
  Damage → Replace the drive chain.
- Drive chain rollers ②
  Damage/wear → Replace the drive chain.
- Drive chain side plates ③
  Cracks/damage/wear → Replace the drive chain.

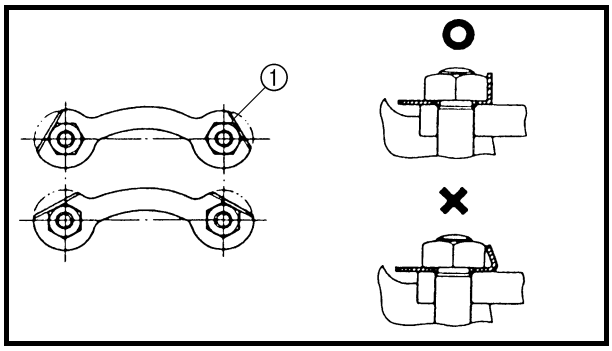


T*****
REAR WHEEL CLUTCH HUB INSPECTION
1.Inspect:
- Rear wheel clutch hub
  Wear/damage/cracks → Replace.



T******
DRIVEN SPROCKET ASSEMBLY
1.Install:
- Driven sprocket ①
- Lock washers ② New
- Bolts ③ **30 Nm (3.0 m • kg)**

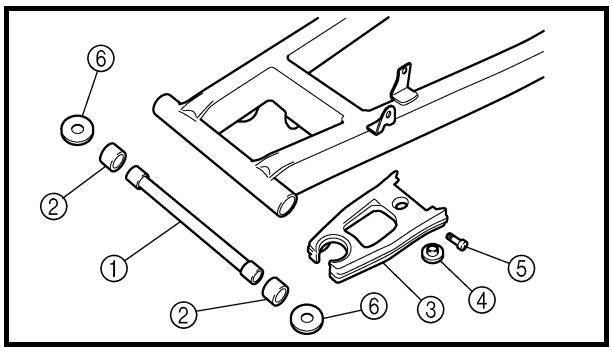
NOTE:
Tighten the bolts in a crisscross pattern.



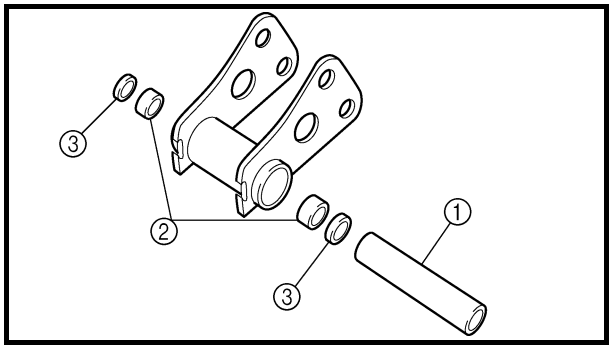
2.Bend:
- Lock washer tab ①
  (along a flat side of the end)

EAS00711
REAR SHOCK ABSORBER AND SWINGARM INSTALLATION
Reverse the “REMOVAL” procedure.
Note the following points.
1.Lubricate:
- Bearings
- Collars
- Dust covers
- Pivot shaft
- Bushes

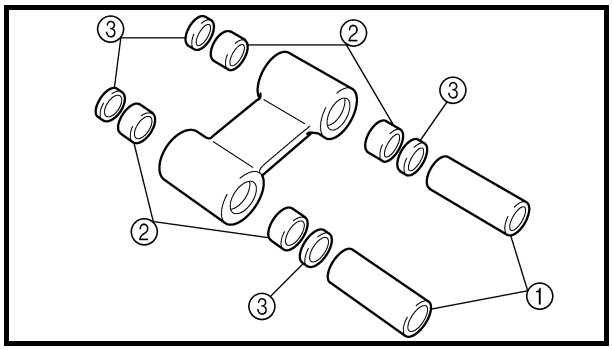
Recommended lubricant
Lithium soap-base grease



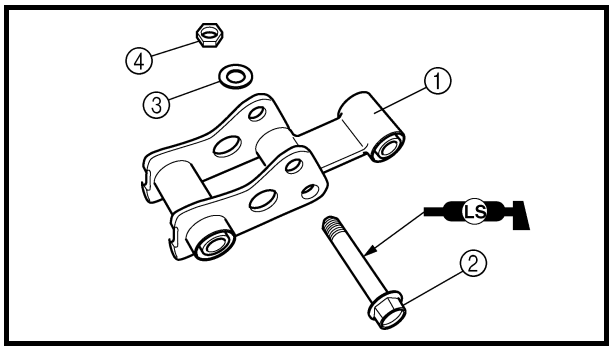
2.Install:
- Bush ①
- Bearings ②
- Chain guide ③
- Collar (chain guide) ④
- Bolt (chain guide) ⑤
- Dust covers ⑥
  (to the swingarm).



3.Install:
- Collar ①
- Bushes ②
- Oil seals ③
  (to the relay arm).



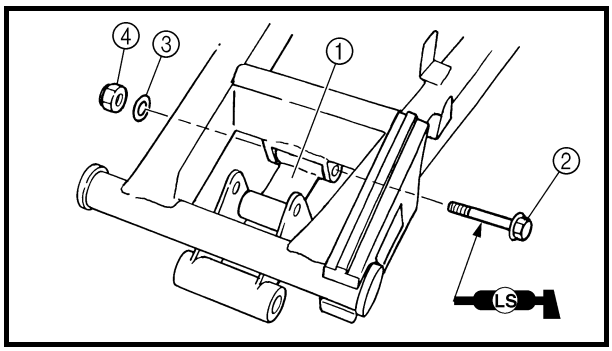
4.Install:
- Collars ①
- Bushes ②
- Oil seals ③
  (to the connecting arm).



5.Install:
- Connecting arm ①
- Bolt (connecting arm-relay arm) ②
- Washer ③
- Nut (connecting arm-relay arm) ④

	59 Nm (5.9 m • kg)

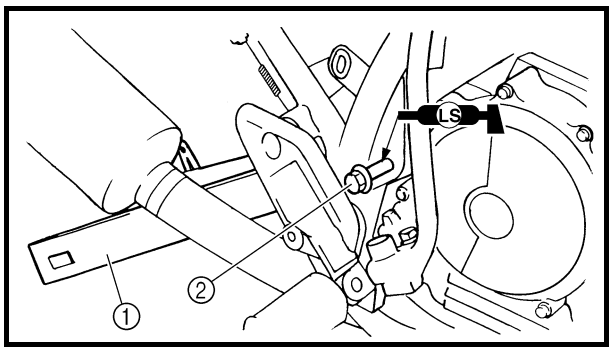
NOTE:
- Apply the lithium soap-base grease on the bolt.
- Install the nut on the right side of the chassis.



6.Install:
- Connecting arm ①
- Bolt (connecting arm-swingarm) ②
- Washer ③
- Nut (connecting arm-swingarm) ④

59 Nm (5.9 m • kg)

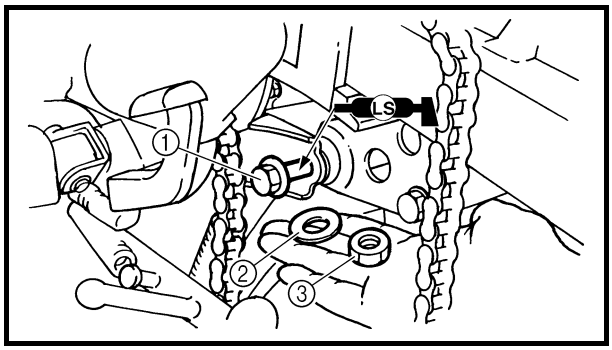
NOTE:
Apply the lithium soap-base grease on the bolt.



7.Install:
- Swingarm ①
- Pivot shaft ②
- Washer
- Nut

59 Nm (5.9 m • kg)

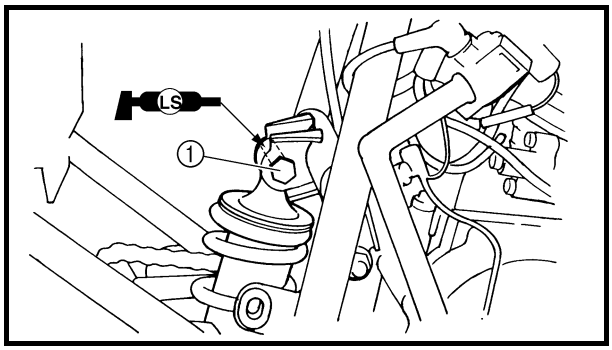
NOTE:
- Apply the lithium soap-base grease on the pivot shaft.
- Insert the pivot shaft from right side



8.Install:
- Bolt (relay arm-frame) ①
- Washer ②
- Nut (relay arm-frame) ③

59 Nm (5.9 m • kg)

NOTE:
Apply the lithium soap-base grease on the bolt.



9.Install:
- Bolt (rear shock absorber-frame) ①

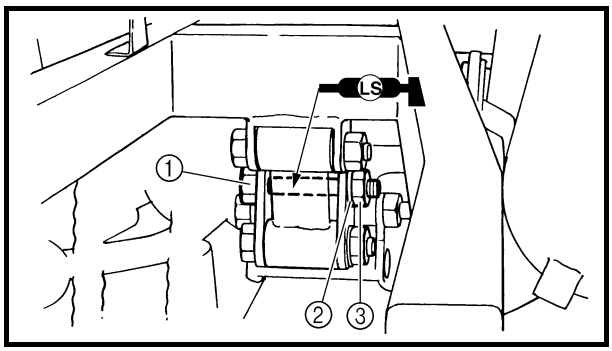
59 Nm (5.9 m • kg)

NOTE:
Apply the lithium soap-base grease on the bolt.

10.Install:
- Bolt (rear shock absorber-relay arm) ①
- Washer ②
- Nut (rear shock absorber-relay arm) ③

59 Nm (5.9 m • kg)

NOTE:
- Apply the lithium soap-base grease on the bolt.
- Insert the bolt from left side.



CHAPTER 7.
ELECTRICAL

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CHECKING THE SWITCHES 7-4

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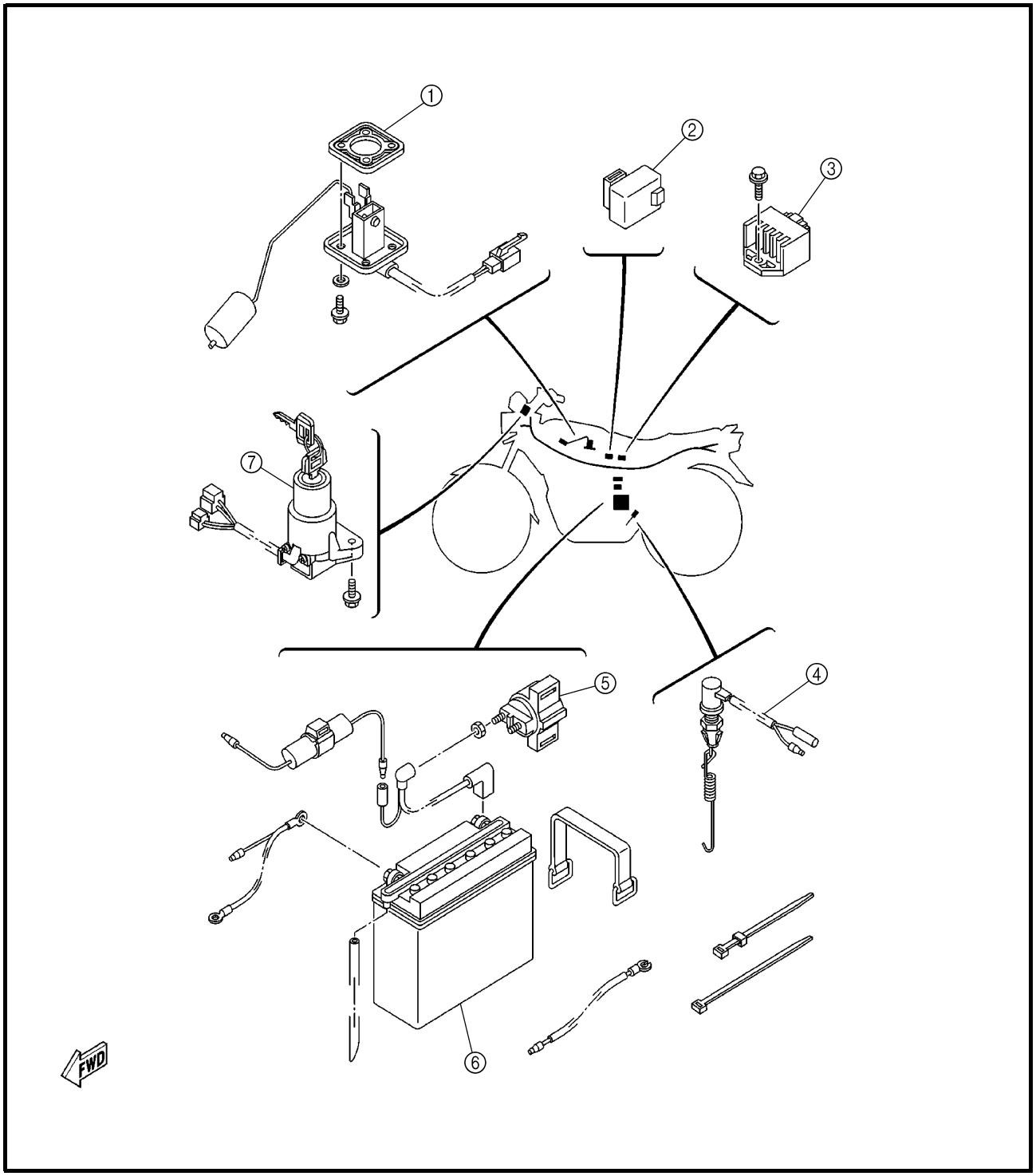
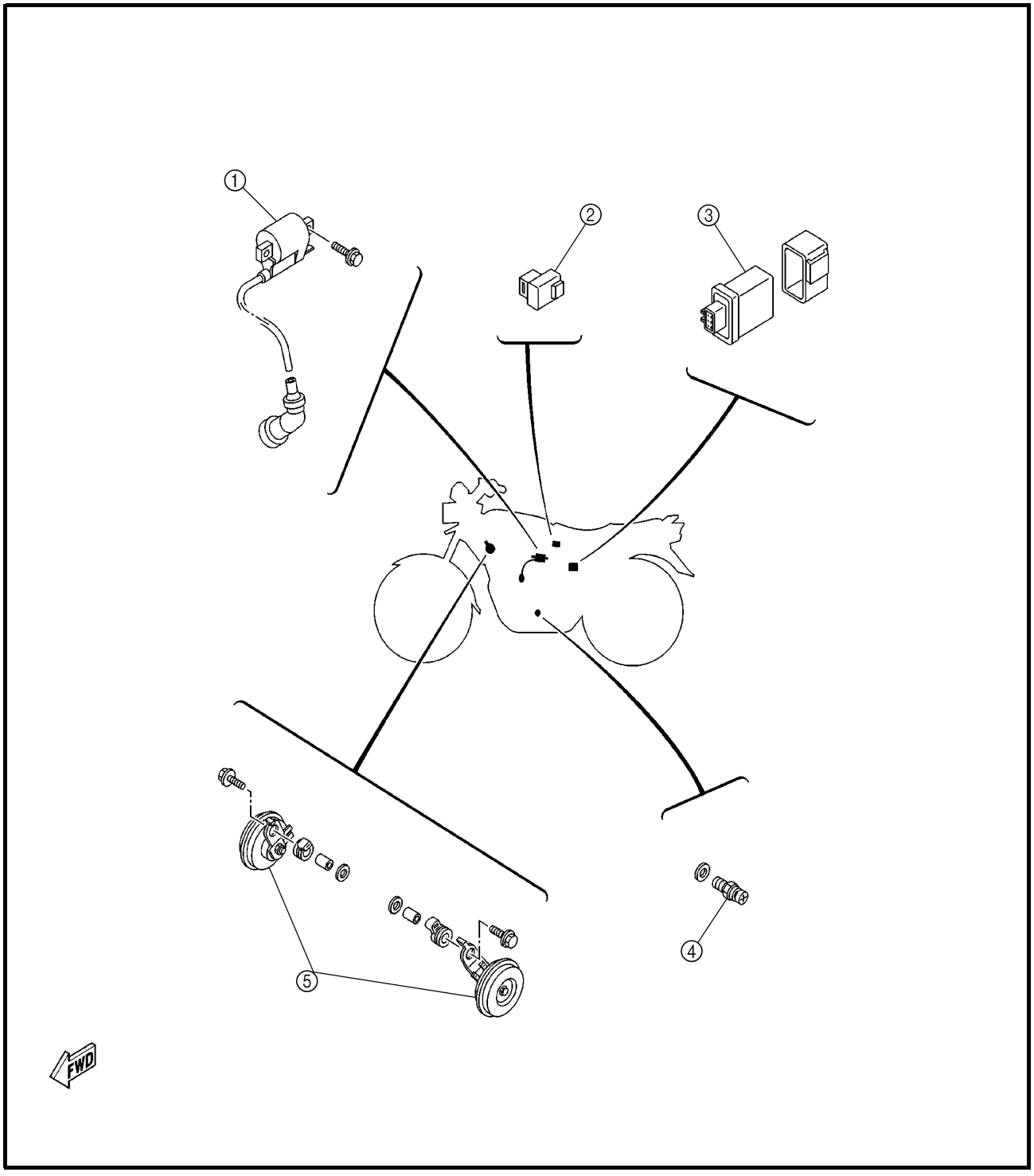
ELECTRICAL

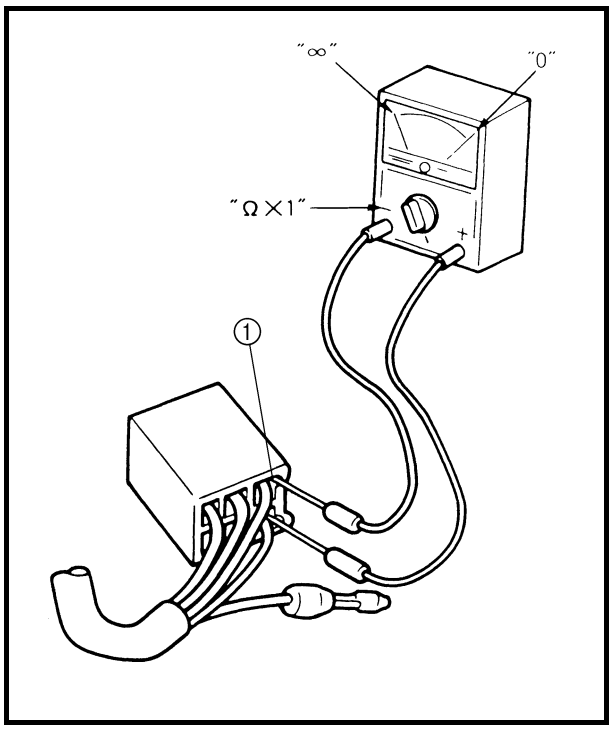
ELECTRICAL COMPONENTS

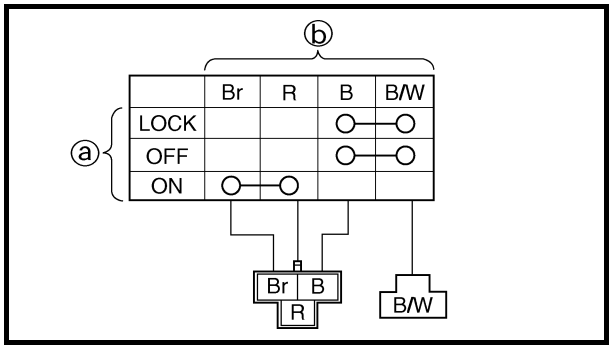
① Fuel sender
② Starting circuit cut-off relay
③ Rectifier/regulator
④ Rear brake switch
⑤ Starter relay
⑥ Battery
⑦ Main switch



① Ignition coil
② Flasher relay
③ CDI unit
④ Neutral switch
⑤ Horn







EAS0010
SWITCHES

CHECKING SWITCH CONTINUITY

Check each switch for continuity with the pocket tester.
If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

CAUTION:

Never insert the tester probes into the coupler terminal slots ①. Always insert the probes from the opposite end of the coupler, taking care not to loosen or damage the leads.

	Pocket tester 90890-03112

NOTE:

- Before checking for continuity, set the pocket tester to "0" and to the "Ω × 1" range.
- When checking for continuity, switch back and forth between the switch positions a few times.

The terminal connections for switches (e.g., main switch, engine stop switch) are shown in an illustration similar to the one on the left.
The switch positions ⓐ are shown in the far left column and the switch lead colors ⓑ are shown in the top row in the switch illustration.

NOTE:

"○——○" indicates a continuity of electricity between switch terminals (i.e., a closed circuit at the respective switch position).

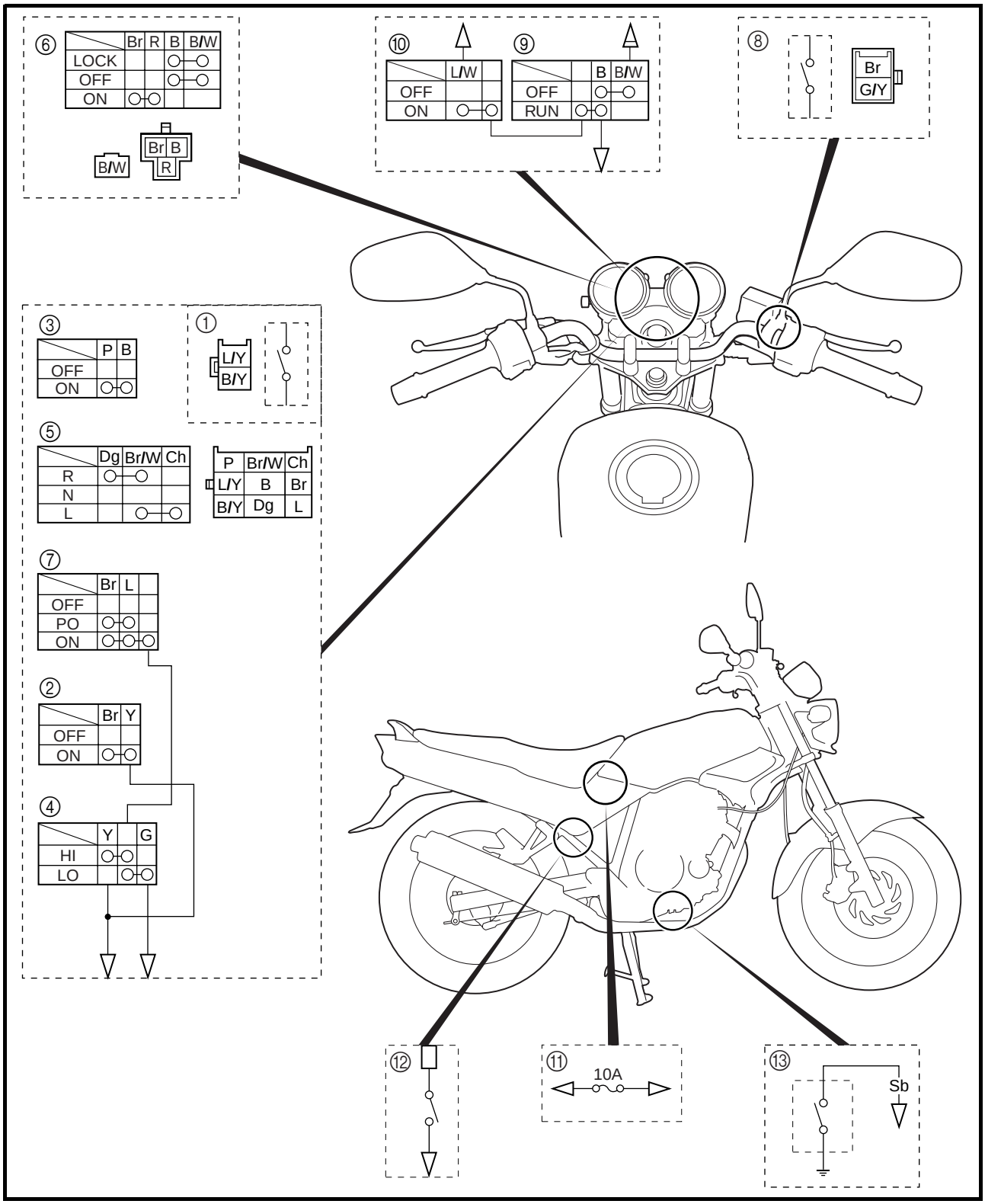
The example illustration on the left shows that:

There is continuity between black/white and black when the switch is set to "OFF" or "LOCK".
There is continuity between brown and red when the switch is set to "ON".

EAS00731
CHECKING THE SWITCHES

Check each switch for damage or wear, proper connections, and also for continuity between the terminals. Refer to the “CHECKING SWITCH CONTINUITY” section.

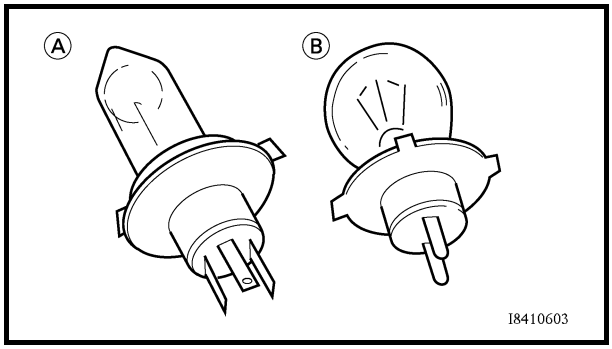
Damage/wear → Repair or replace the switch.
Improperly connected → Properly connect.
Incorrect continuity reading → Replace the switch.

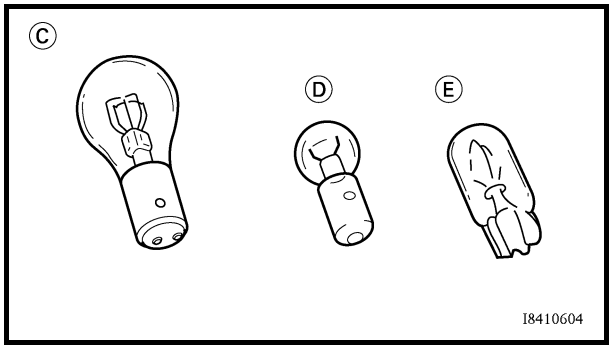


① Clutch switch
② Pass switch
③ Horn switch
④ Dimmer switch
⑤ Turn switch
⑥ Main switch
⑦ Lights switch
⑧ Front brake switch
⑨ Engine stop switch
⑩ Start switch
⑪ Fuse
⑫ Rear brake switch
⑬ Neutral switch

CHECKING OF BULBS (FOR HEADLIGHT, TAIL/BLAKE LIGHT, FLASHER LIGHT, METER LIGHT, ETC.)

To determine the condition of a bulb check for continuity at the bulb terminal.





KINDS OF BULBS

The bulbs used in motorcycles can be classified by shape of socket and use.

Ⓐ and Ⓑ are the main types used in headlights.

Ⓒ is mainly used for the flasher light and tail/brake light.

Ⓓ and Ⓔ are mainly used for meter lights and other indicator lights.

CHECKING BULB CONDITION

1.Remove the bulb.

NOTE:

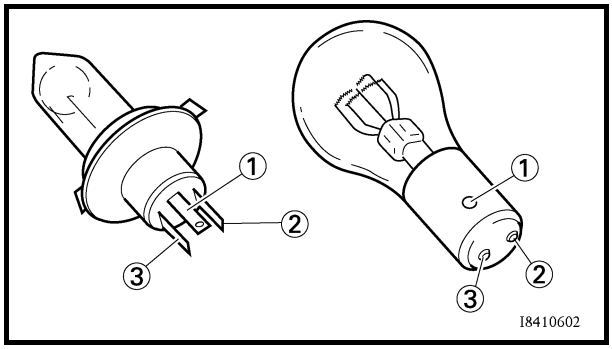
- Bulbs of the Ⓐ and Ⓑ type uses a bulb holder. Remove the bulb holder before removing the bulb itself. Most of the bulb holders for this type can be removed by turning counterclockwise.
- Most of the bulbs of Ⓒ and Ⓓ type can be removed from the bulb sockets by pushing and turning them counterclockwise.
- Bulbs of the Ⓔ type can just be pulled out.

CAUTION:

Be sure to hold the socket firmly when removing the bulb. Never pull the lead. Otherwise, the lead may be pulled off the terminal in the coupler.

⚠ WARNING

Headlight bulbs become very hot even after a short time. Keep flammable products away from a hot headlight bulb and be careful never to touch it, before it had time to cool down.



2.Check for continuity at the bulb terminals.

****

Checking steps:

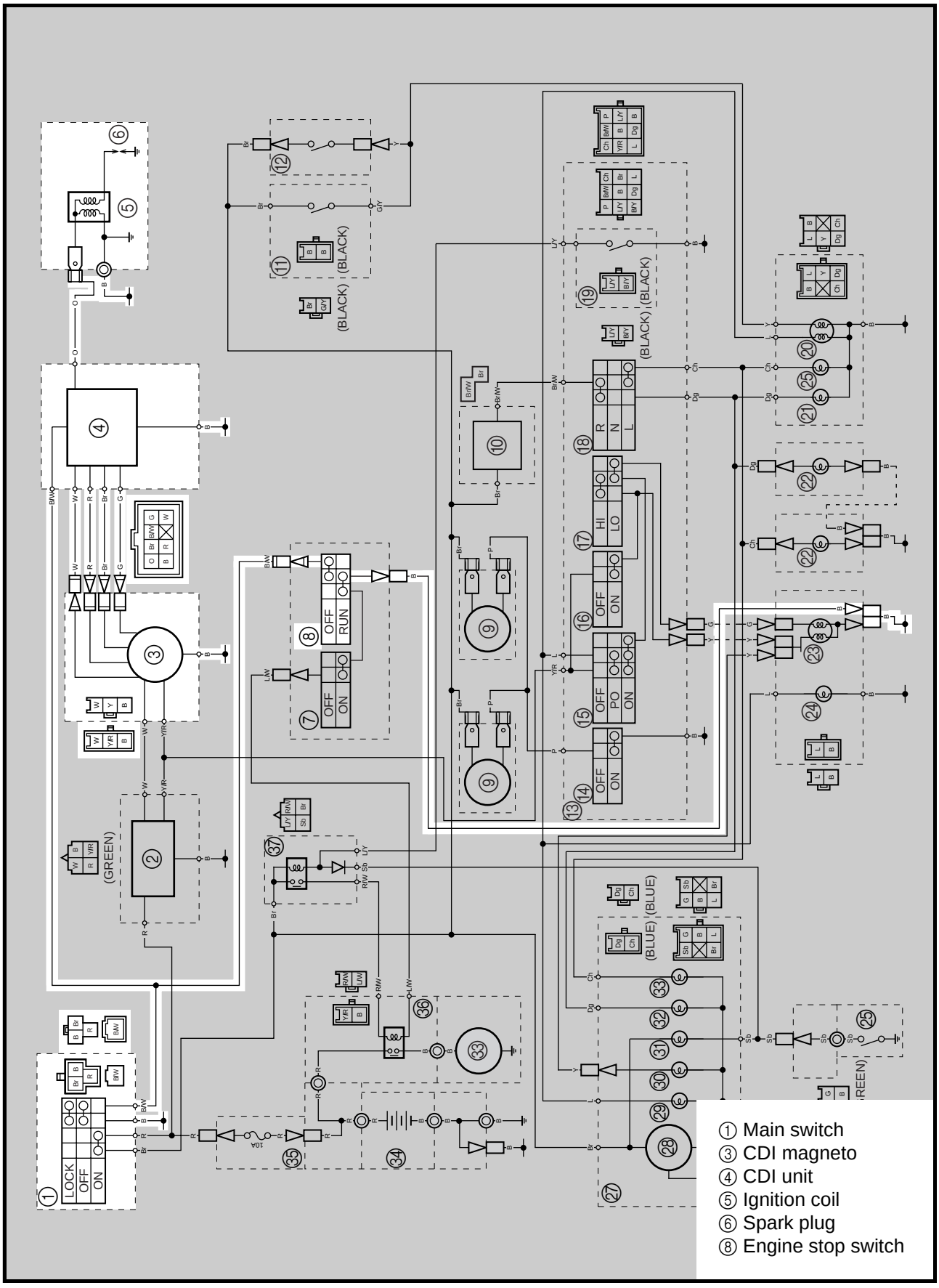
- Set the pocket tester selector to "$\Omega \times 1$".
- Connect the tester leads to the respective bulb terminals. Take for example a 3-terminal bulb as shown left. First check the continuity between the terminals ① and ② by connecting the tester (+) lead to the terminal ① and the tester (–) lead to the terminal ②. Then check the continuity between the terminals ① and ③ by connecting the tester (+) lead still to the terminal ① and the tester (–) lead to the terminal ③. If the tester shows "∞" in either case, replace the bulb.

****

3.Check the bulb socket by installing a proven bulb to it. As in the checking of bulbs, connect the pocket tester leads to the respective leads of the socket and check for continuity in the same manner as mentioned above.

IGNITION SYSTEM

CIRCUIT DIAGRAM



TROUBLESHOOTING

IF IGNITION SYSTEM SHOULD BECOME INOPERATIVE (NO SPARK OR INTERMITTENT SPARK)

Procedure

Check;

1.Spark plug
2.Ignition spark gap
3.Spark plug cap resistance
4.Ignition coil resistance
5.Main switch
6.Engine stop switch
7.Source coil resistance
8.Pickup coil resistance
9.Wiring connection (ignition system)

NOTE:

- Remove the following parts before troubleshooting.

1)Headlight unit
2)Seat
3)Fuel tank

- Use the following special tools in this troubleshooting.

	Pocket tester: 90890-03112
	Ignition checker: 90890-06754

1.Spark plug

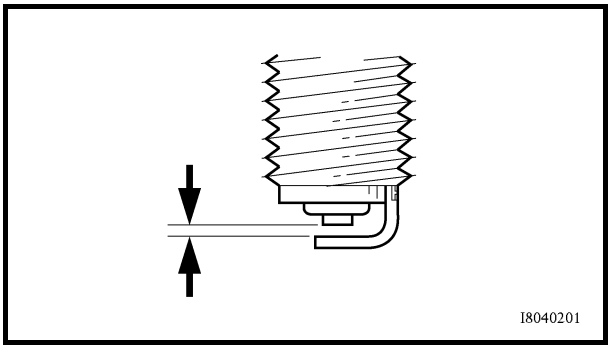
- Check the spark plug type, condition and gap.
  Refer to the “SPARK PLUG INSPECTION” section in CHAPTER 3.

Standard spark plug:
D8EA (NGK) or X24ES-U (DENSO)

Spark plug gap:
0.6 ~ 0.7 mm

CORRECT

*



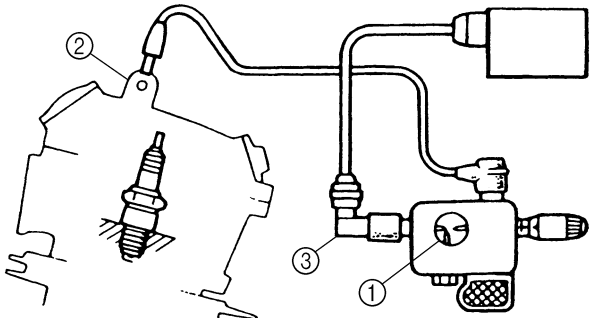
INCORRECT

Repair or replace spark plug.

*

2.Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker ① between cylinder head and spark plug cap ②, and set the specified spark gap ③.



- Turn the main switch to “ON”, then apply clutch lever or shift the transmission into neutral.
- Push the start switch or kick the kick crank.
- Check the ignition spark condition.

Minimum spark gap:
6 mm

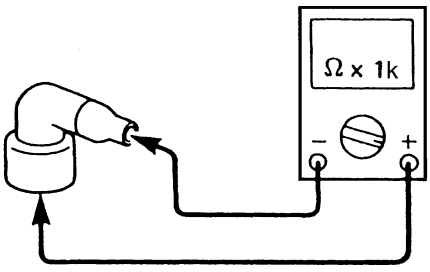
SPARK

Ignition circuit is good.

OUT OF SPECIFICATION

3.Spark plug cap resistance

- Remove the spark plug cap.
- Connect the pocket tester (Ω × 1k) to the spark plug cap.



- Checking the spark plug cap for the specified resistance.

Spark plug cap resistance:
10 kΩ at 20°C

OUT OF SPECIFICATION

Replace spark plug cap.

MEETS SPECIFICATION

*

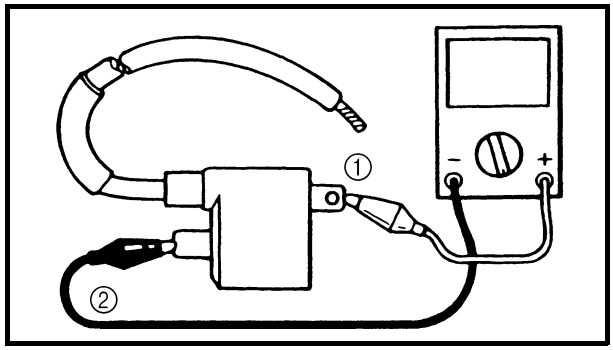
*

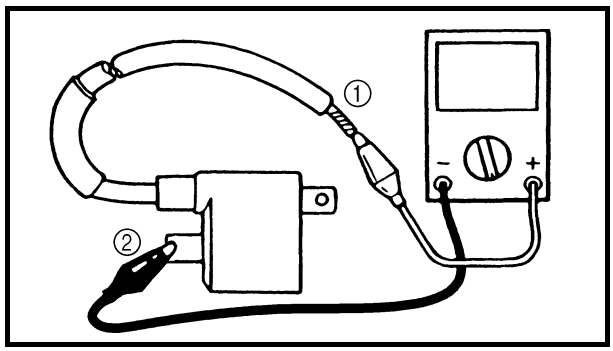
4.Ignition coil resistance

- Disconnect the ignition coil lead (Orange) from the wire harness.
- Connect the pocket tester to the ignition coil.

Primary coil: (Ω × 1)
Tester (+) lead → Orange ① terminal
Tester (–) lead → Ignition coil base ②

Secondary coil: (Ω × 1k)
Tester (+) lead → Spark plug lead ③
Tester (–) lead → Ignition coil base ②





- Measure the primary and secondary coil resistances.

Primary coil resistance Ⓐ:
0.32 ~ 0.48 Ω at 20°C
Secondary coil resistance Ⓑ:
5.68 ~ 8.52 kΩ at 20°C

OUT OF SPECIFICATIONS → Replace ignition coil.

BOTH MEETS SPECIFICATIONS

5.Main switch

- Check the main switch for continuity. Refer to the “CHECKING THE SWITCHES” section.

INCORRECT → Replace main switch.

CORRECT

6.Engine stop switch

- Check the engine stop switch for continuity. Refer to the “CHECKING THE SWITCHES” section.

INCORRECT → Replace handlebar switch (right).

CORRECT

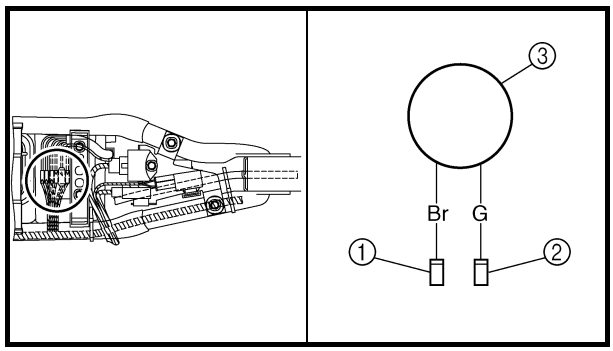
*

*

7.Source coil resistance

- Disconnect the CDI magneto coupler from the wire harness.
- Connect the pocket tester (Ω × 100) to the source coil.

Tester (+) lead → Brown ① terminal
Tester (–) lead → Green ② terminal



③ CDI magneto
- Measure the source coil resistance.

Source coil resistance:
688 ~ 1,032 Ω at 20°C

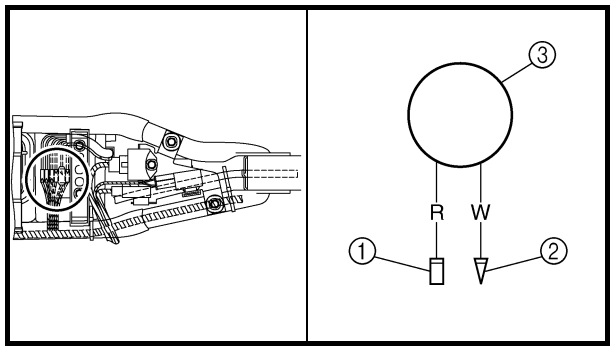
OUT OF SPECIFICATION → Replace source coil.

MEETS SPECIFICATION

8.Pickup coil resistance

- Disconnect the CDI magneto coupler from the wire harness.
- Connect the pocket tester (Ω × 100) to the pickup coil.

Tester (+) lead → Red ① terminal
Tester (–) lead → White ② terminal



③ CDI magneto
- Measure the pickup coil resistance.

Pickup coil resistance:
248 ~ 372 Ω at 20°C

OUT OF SPECIFICATION → Replace pickup coil.

MEETS SPECIFICATION

9.Wiring connection

- Check the entire ignitions system for connections.
  Refer to the “WIRING DIAGRAM” section.

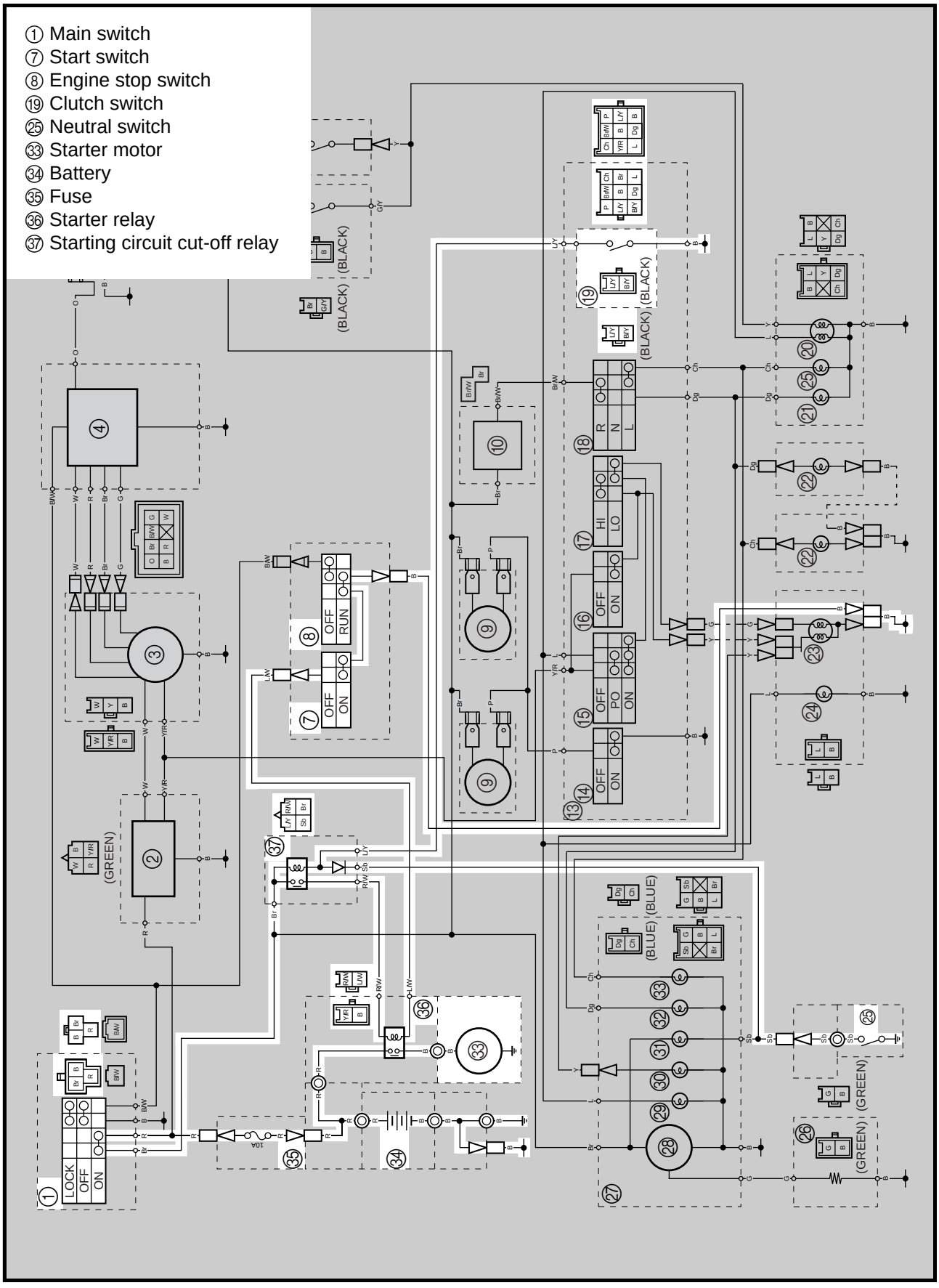
POOR CONNECTION → Correct.

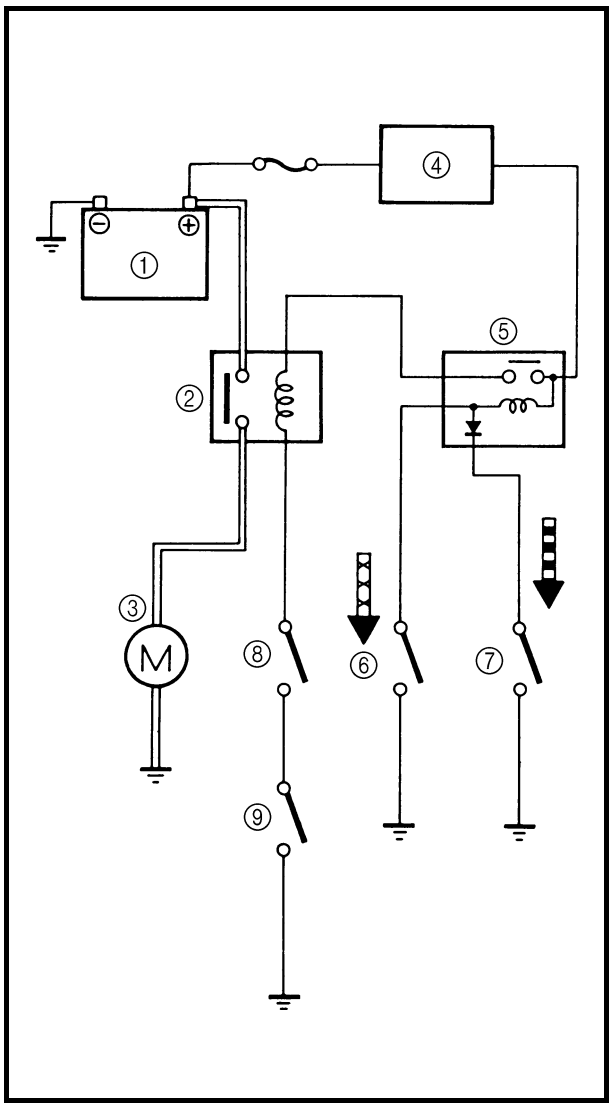
CORRECT

CDI unit is faulty. Replace it.

ELECTRIC STARTING SYSTEM

CIRCUIT DIAGRAM





STARTING CIRCUIT OPERATION

The starting circuit on this model consist of the starter motor, starter relay, and the relay unit (starting circuit cut-off relay). If the engine stop switch and the main switch are both closed, the starter motor can operate only if:

The transmission is in neutral (the neutral switch is closed).
or if
The clutch lever is pulled to the handlebar (the clutch switch is closed).

The starting circuit cut-off relay prevents the starter from operating when neither of these conditions has been met. In this instance, the starting circuit cut-off relay is open so current cannot reach the starter motor.

When one of both of the above conditions have been met, however, the starting circuit cut-off relay is closed, and the engine can be started by pressing the starter switch.

WHEN THE TRANSMISSION IS IN NEUTRAL

WHEN THE CLUTCH LEVER IS PULLED IN

① Battery
② Starter relay
③ Starter motor
④ Main switch
⑤ Starting circuit cut-off relay (relay assembly)
⑥ Clutch switch
⑦ Neutral switch
⑧ Start switch
⑨ Engine stop switch

TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

Procedure

Check;

1.Fuse
2.Battery
3.Starter motor
4.Starter relay
5.Starting circuit cut-off relay (relay assembly)
6.Main switch
7.Engine stop switch
8.Neutral switch
9.Clutch switch
10.Start switch
11.Wiring connection (electric starting system)

NOTE:

- Remove the following parts before troubleshooting.
  1)Side cover (right)
  2)Headlight unit
  3)Seat
  4)Fuel tank
- Use the following special tool in this troubleshooting.

Pocket tester:
90890-03112

1.Fuse

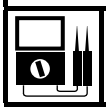
- Connect the pocket tester "Ω × 1" to the fuse.
- Check the fuse for continuity.

INCORRECT → Replace fuse.

CONTINUITY ⇩

2.Battery

- Check the battery condition.
- Check the battery fluid level, battery terminals and specific gravity.



Specific gravity:
1.280 at 20°C

INCORRECT →
- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

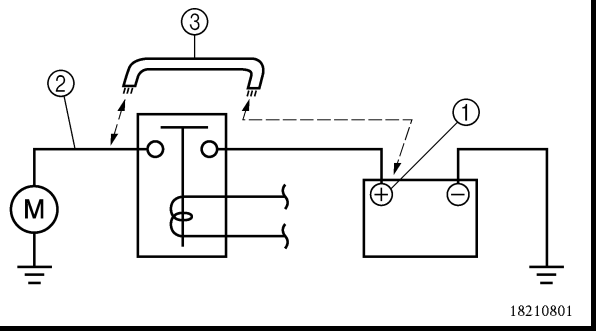
CORRECT ⇩

*

*

3.Starter motor

- Connect the battery positive terminal ① and starter motor cable ② using the jumper lead ③ *.
- Check the starter motor operation.



*

⚠ WARNING

- **A wire for the jumper lead must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.**
- **This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.**

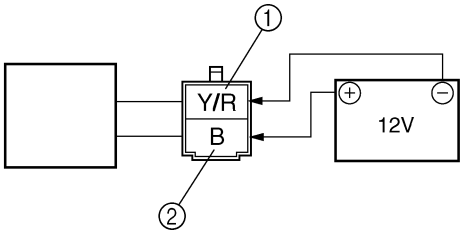
INOPERATIVE

Repair or replace starter motor.

4.Starter relay

- Disconnect the starter relay coupler from the wire harness.
- Connect the battery (12 V) to the starter relay terminals, using the jumper leads *.

Battery (+) lead → Yellow/Red ① terminal
Battery (–) lead → Black ② terminal



- Check the starter motor for operation.

MOVES

*

*

⚠ WARNING

- **A wire for the jumper lead must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.**
- **This check is likely to produce sparks, so be sure that no flammable gas or fluid is the vicinity.**

DOES NOT MOVES

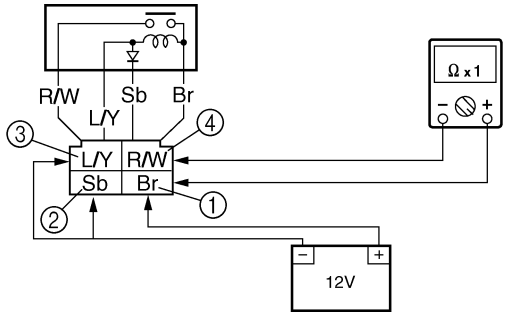
Replace starter relay.

*

5.Starting circuit cut-off relay

- Disconnect the relay lead coupler from the wire harness.
- Connect the pocket tester (Ω × 1) and battery (12 V) to relay.

Step 1:
Battery (+) lead → Brown terminal ①
Battery (–) lead → Sky blue terminal ②
Tester (+) lead → Brown terminal ①
Tester (–) lead → Red/White terminal ④
Step 2:
Battery (+) lead → Brown terminal ①
Battery (–) lead →
Blue/Yellow terminal ③
Tester (+) lead → Brown terminal ①
Tester (–) lead → Red/White terminal ④



- Check the relay for continuity.

NO CONTINUITY

Replace relay.

CONTINUITY

6.Main switch

- Check the main switch for continuity. Refer to the “CHECKING THE SWITCHES” section.

INCORRECT

Replace main switch.

CORRECT

7.Engine stop switch

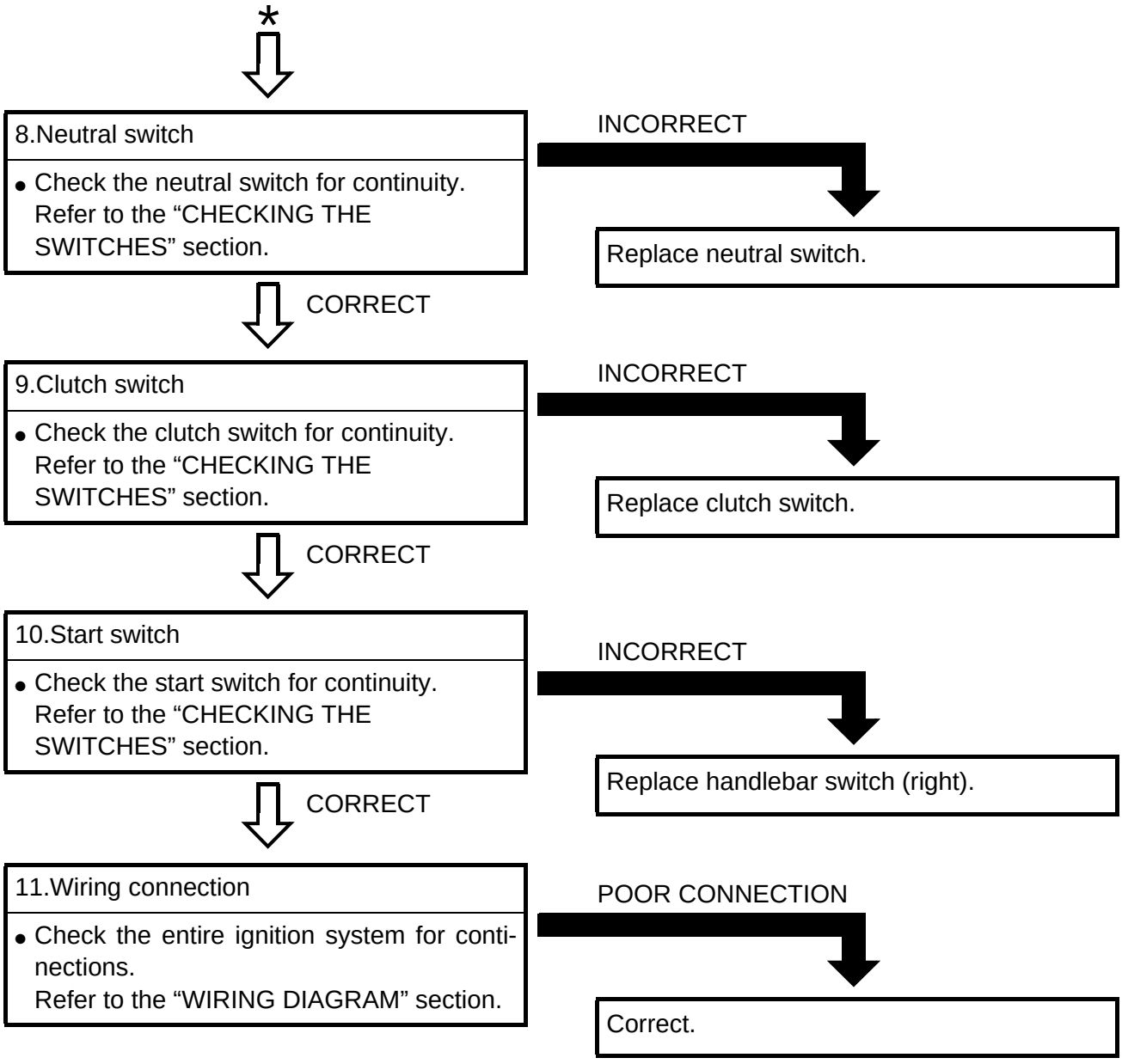
- Check the engine stop switch for continuity. Refer to the “CHECKING THE SWITCHES” section.

INCORRECT

Replace handlebar switch (right).

CORRECT

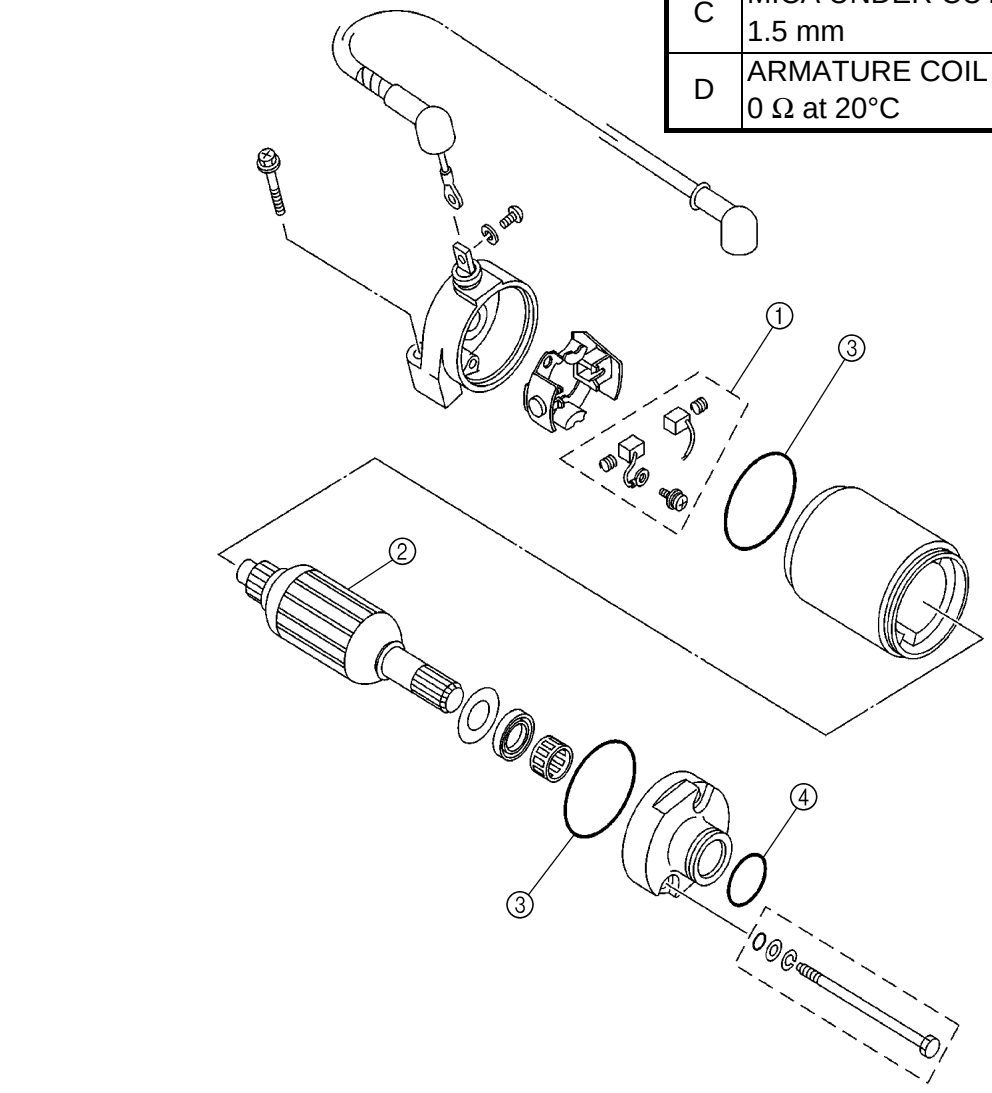
*


*
8.Neutral switch
• Check the neutral switch for continuity. Refer to the “CHECKING THE SWITCHES” section.
INCORRECT
Replace neutral switch.
CORRECT
9.Clutch switch
• Check the clutch switch for continuity. Refer to the “CHECKING THE SWITCHES” section.
INCORRECT
Replace clutch switch.
CORRECT
10.Start switch
• Check the start switch for continuity. Refer to the “CHECKING THE SWITCHES” section.
INCORRECT
Replace handlebar switch (right).
CORRECT
11.Wiring connection
• Check the entire ignition system for connections. Refer to the “WIRING DIAGRAM” section.
POOR CONNECTION
Correct.

STARTER MOTOR

① Brush
② Armature
③ O-ring
④ O-ring

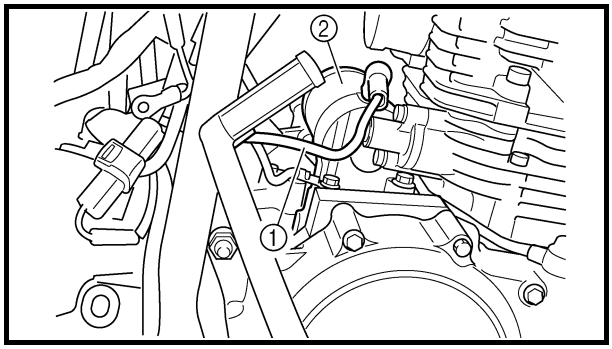
A	BRUSH LENGTH LIMIT: 3.5 mm
B	COMMUTATOR WEAR LIMIT: 21 mm
C	MICA UNDER CUT: 1.5 mm
D	ARMATURE COIL RESISTANCE: 0 Ω at 20°C



Removal

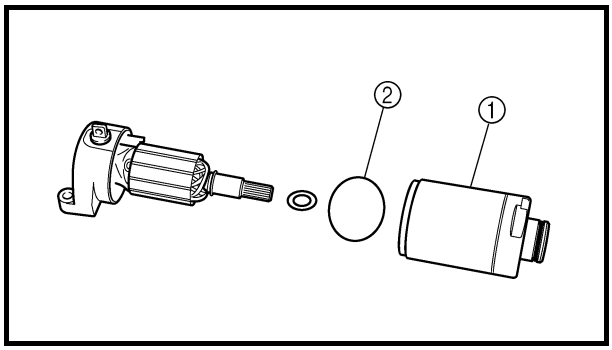
1.Remove:
- Carburetor
  Refer to the “CARBURETOR” section in CHAPTER 5.

2.Remove:
- Clutch cable
  Refer to the “WIRE, CABLE AND TUBE” section in CHAPTER 4.



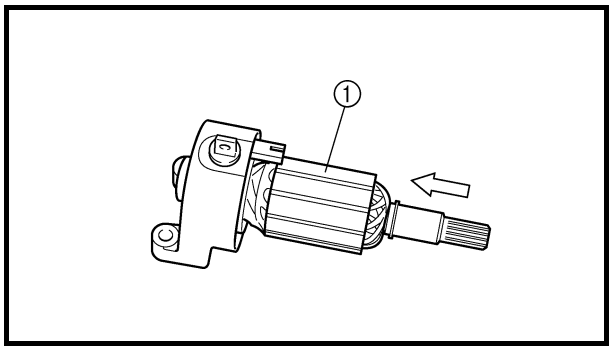
3.Disconnect:
- Starter motor lead ①

4.Remove:
- Starter motor ②

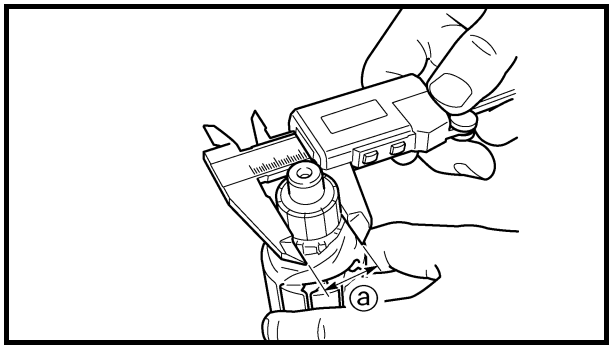


5.Remove:
- Bolts (starter motor front cover)

6.Remove:
- Starter motor yoke ①
- O-ring ②



7.Remove:
- Armature ①

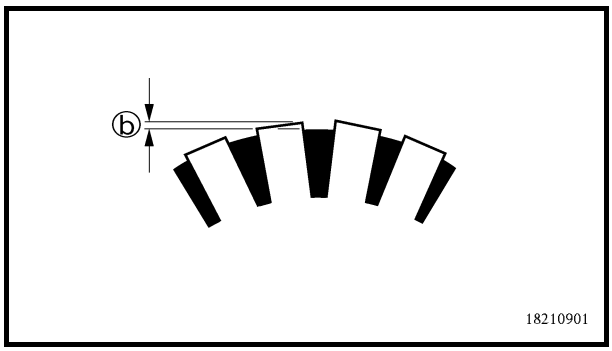


Inspection and repair

1.Inspect:
- Commutator
  Dirty → Clean it with #600 grit sandpaper.

2.Measure:
- Commutator diameter ⓐ
  Out of specification → Replace starter motor.

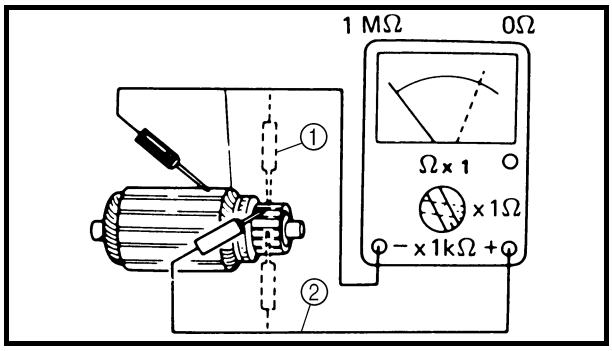
	Commutator wear limit: 21 mm



3.Measure:
- Mica undercut ⓑ
  Out of specification → Scrape the mica to proper value use a hacksaw blade can be ground to fit.

Mica undercut:
1.5 mm

NOTE:
the mica insulation of the commutator must be undercut to ensure proper operation of commutator.



4.Inspect:
- Armature coil (continuity/insulation)
  Defects (s) → Replace starter motor.

****

Inspecting steps:
- Connect the pocket tester for continuity check ① and insulation check ②.

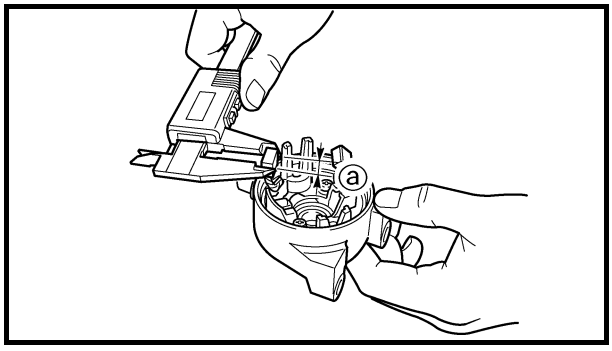
Pocket tester:
90890-03112

- Measure the armature coil resistances.

Armature coil resistance:
Continuity check ①: (Ω × 1)
0 Ω at 20°C
Insulation check ②: (Ω × 1k)
More than 1 MΩ at 20°C

- If the resistance is incorrect, replace the starter motor.

****

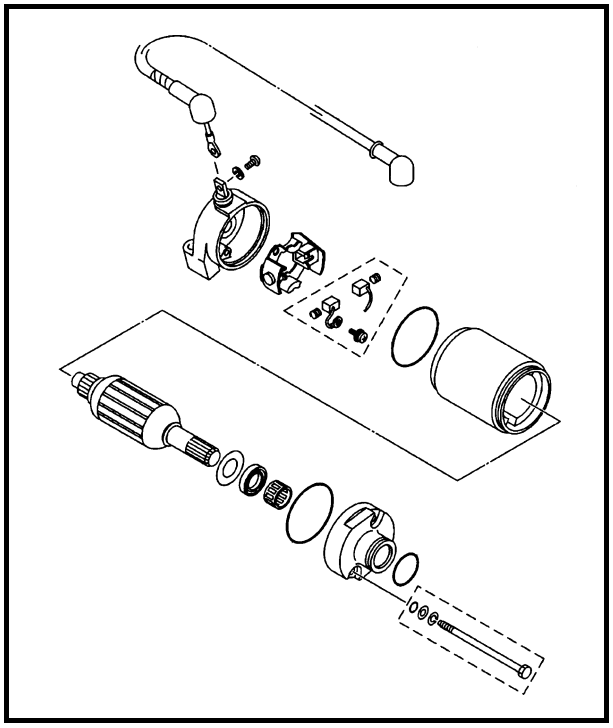


5.Measure:
- Brush length ⓐ
  Out of specification → Replace.

Brush length limit:
3.5 mm

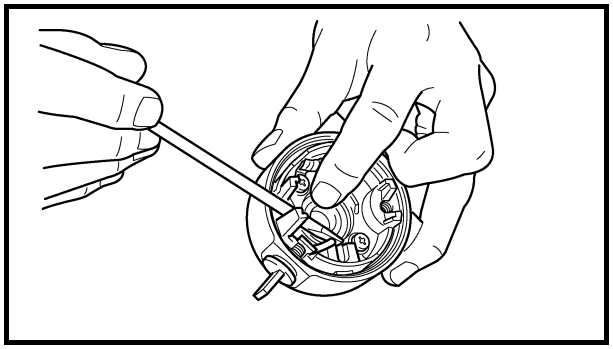
6.Measure:
- Brush spring pressure
  Fatigue/out of specification → Replace as a set.

	Brush spring pressure: **560 ~ 840 g**

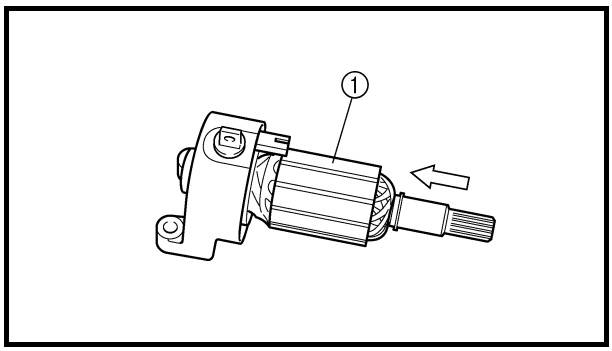


7.Inspect
- Bearing
- Oil seal
- O-ring
  Wear/damage → Replace.

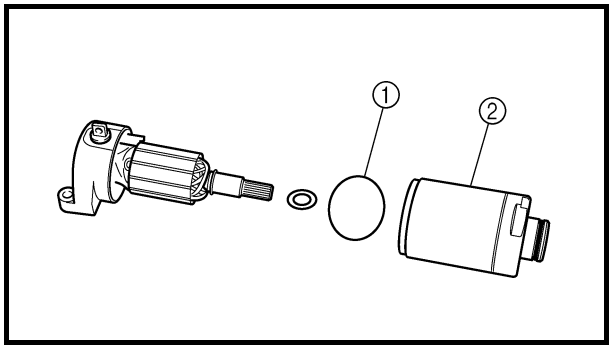
Assembly
Reverse the “Removal” procedure.
Note the following points.



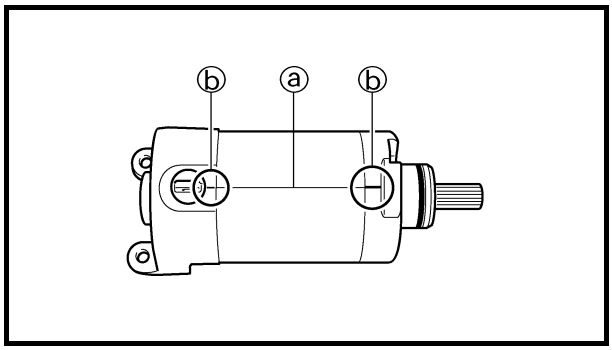
1.Install:
- Brush
- Brush spring
  Using a thin screw driver.



2.Install
- Armature ①

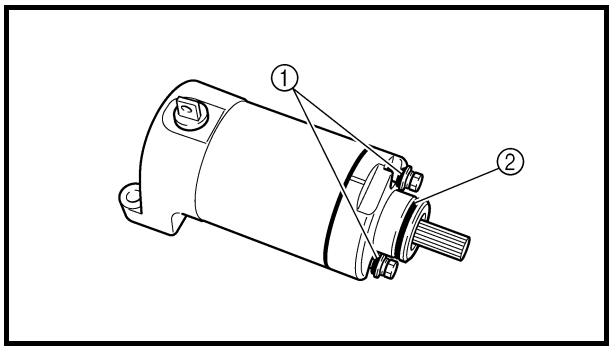


3.Install:
- O-ring ①
- Starter motor yoke ②



4.Install
- Starter motor assembly

NOTE:
Align the groove ⓐ on the starter motor assembly with the groove ⓑ on the housing.



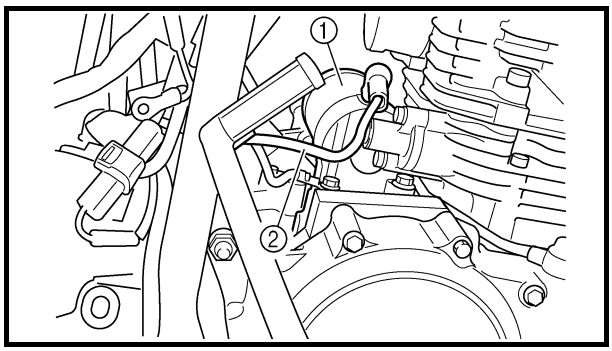
5.Install:
- O-ring ① New
- Screw

⚠ WARNING
Always use a new O-ring.

6.Install:
- O-ring ②

⚠ WARNING
Always use a new O-ring.

NOTE:
Apply a lightly grease to the O-ring ②.



Installation

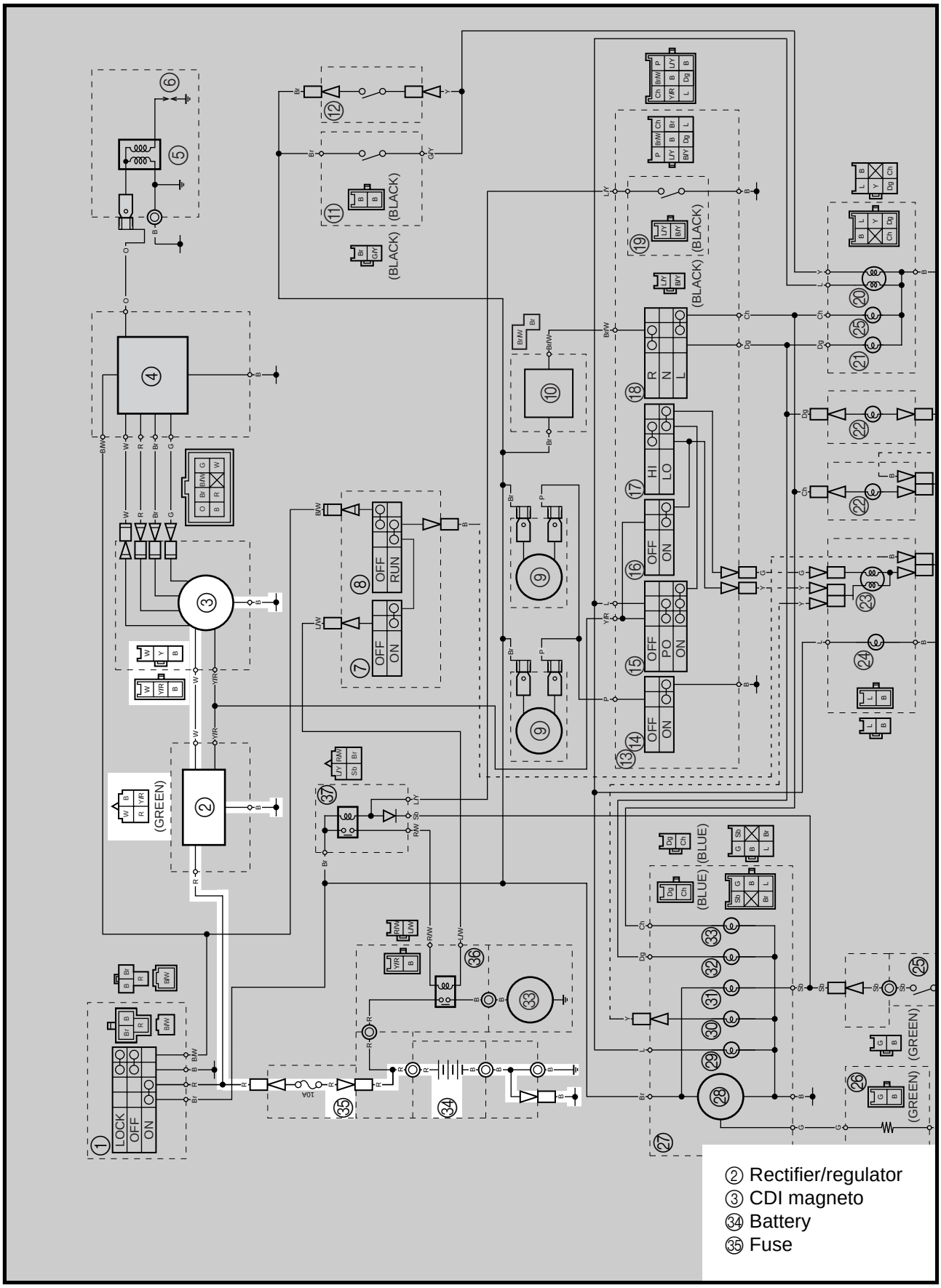
1.Install:

- Starter motor ①
- Starter motor lead ②

	Bolt (starter motor): 10 Nm (1.0 m • kg)

CHARGING SYSTEM

CIRCUIT DIAGRAM



TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

Procedure

Check;

1.Fuse
2.Battery
3.Charging voltage
4.Charging coil resistance
5.Wiring connection (charging system)

NOTE:

- Remove the following parts before troubleshooting.

1)Side cover (right)
2)Seat
3)Fuel tank

- Use the following special tools in this troubleshooting.

Pocket tester:
90890-03112

Inductive tachometer:
90890-03113

1.Fuse

- Connect the pocket tester ($\Omega \times 1$) to the fuse.
- Check the fuse for continuity.

NO CONTINUITY → Replace fuse.

CORRECT ↓

2.Battery

- Check the battery condition.
- Check the battery fluid level, battery terminals and specific gravity.
  Refer to the "BATTERY INSPECTION" section in CHAPTER 3.

Specific gravity:
1.280 at 20°C

INCORRECT → • Refill battery fluid. • Clean battery terminals. • Recharge or replace battery.

CORRECT ↓

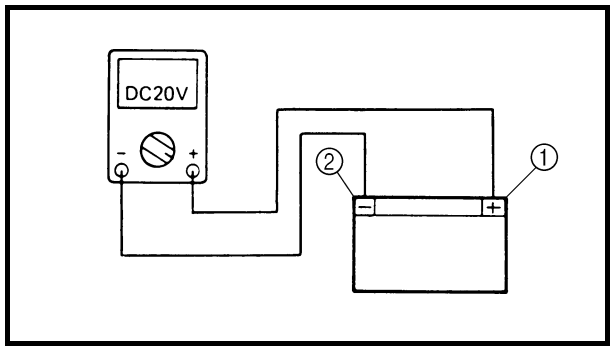
*

*

3.Charging voltage

- Connect the Indicative tachometer to the spark plug lead.
- Connect the pocket tester (DC 20 V) to the battery.

Tester (+) lead → Battery (+) terminal ①
Tester (–) lead → Battery (–) terminal ②



- Start the engine.
- Measure the charging voltage.

Charging voltage:
12 V or more at 3,000 r/min
14.5 V or less at 8,000 r/min

MEETS SPECIFICATION

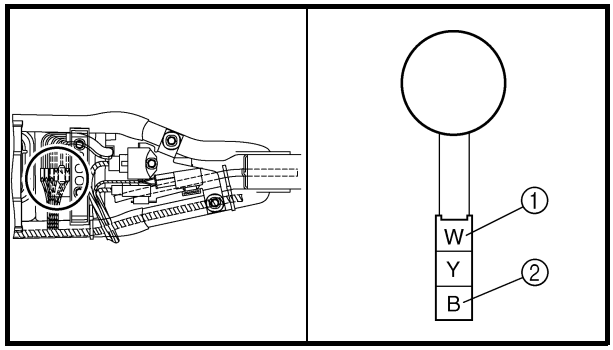
Replace battery.

OUT OF SPECIFICATION

4.Charging coil resistance

- Disconnect the CDI magneto coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the stator coil.

Battery (+) lead → White ① terminal
Battery (–) lead → Black ② terminal



- Measure the charging coil resistance.

Charging coil resistance:
0.32 ~ 0.48 Ω at 20°C
(White - Black)

OUT OF SPECIFICATION

Replace stator assembly.

MEETS SPECIFICATION

5.Wiring connection

- Check the entire charging system for connections.
  Refer to the “WIRING DIAGRAM” section.

POOR CONNECTION

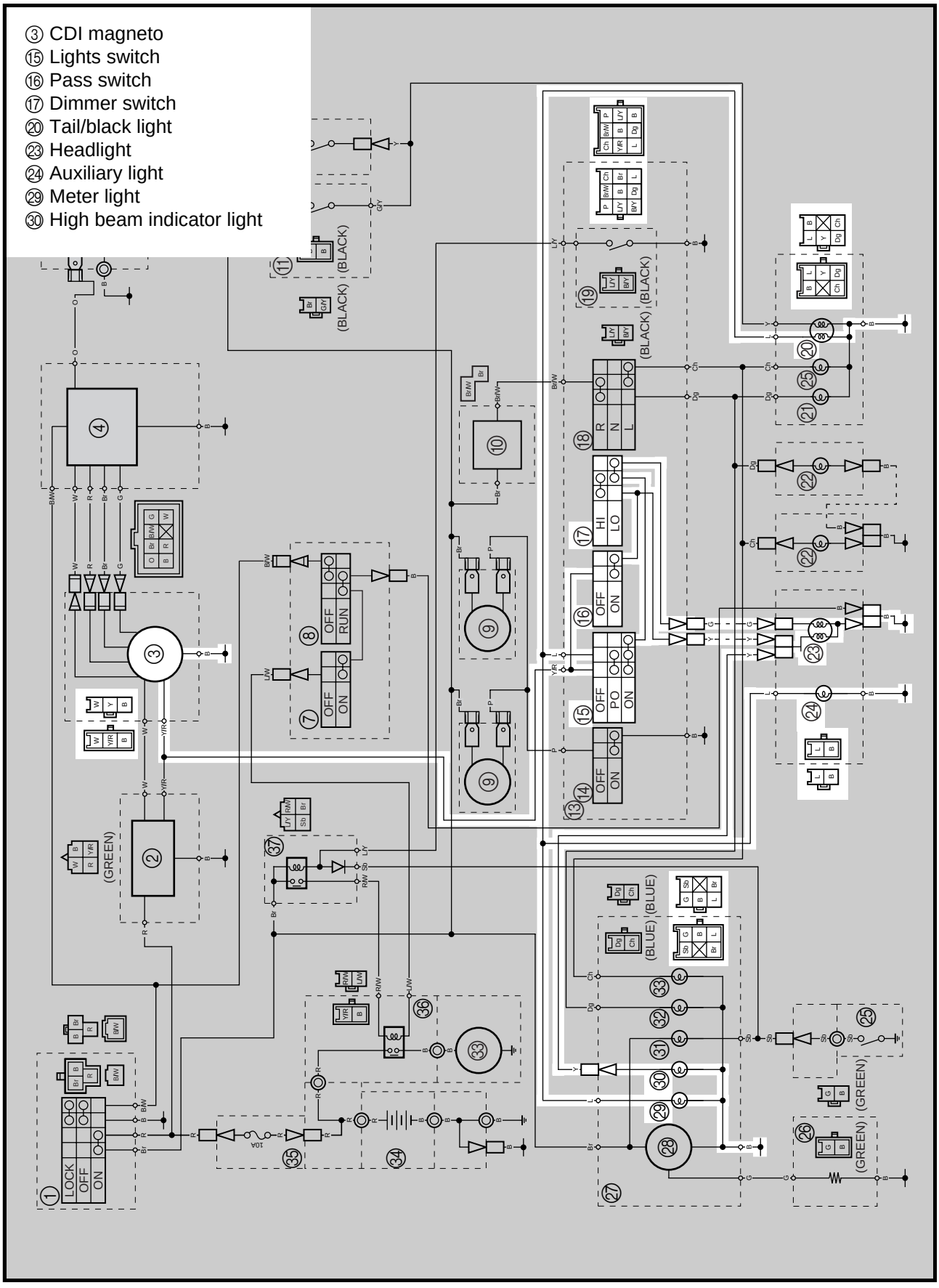
Correct.

CORRECT

Replace rectifier/regulator.

LIGHTING SYSTEM

CIRCUIT DIAGRAM



TROUBLESHOOTING

HEADLIGHT, HIGH BEAM INDICATOR LIGHT, TAILLIGHT AND/OR METER LIGHT DO NOT COME ON.

Procedure

Check;

1.Lighting coil resistance
2.Lights switch
3.Dimmer switch
4.Pass switch
5.Wiring connection (entire lighting system)

NOTE:

- Remove the following parts before troubleshooting.

1)Side cover (right)
2)Headlight unit
3)Seat

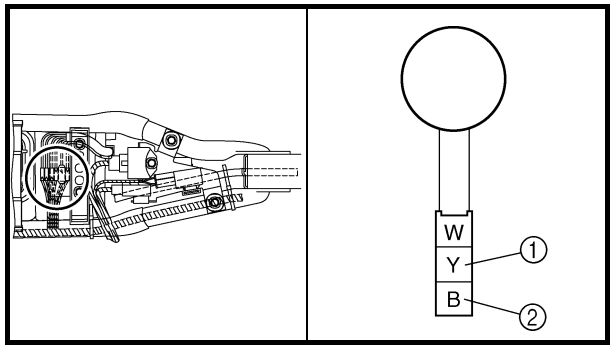
- Use the following special tool (s) in this troubleshooting.

Pocket tester:
90890-03112

1.Lighting coil resistance

- Disconnect the CDI magneto coupler from the wire harness.
- Connect the pocket tester (Ω × 1) to the stator coil.

Tester (+) lead → Yellow ① terminal
Tester (–) lead → Black ② terminal



- Measure the lighting coil resistance.

Lighting coil resistance.
0.24 ~ 0.36 Ω at 20°C
(Yellow - Black)

OUT OF SPECIFICATION → Replace stator assembly.

MEETS SPECIFICATION

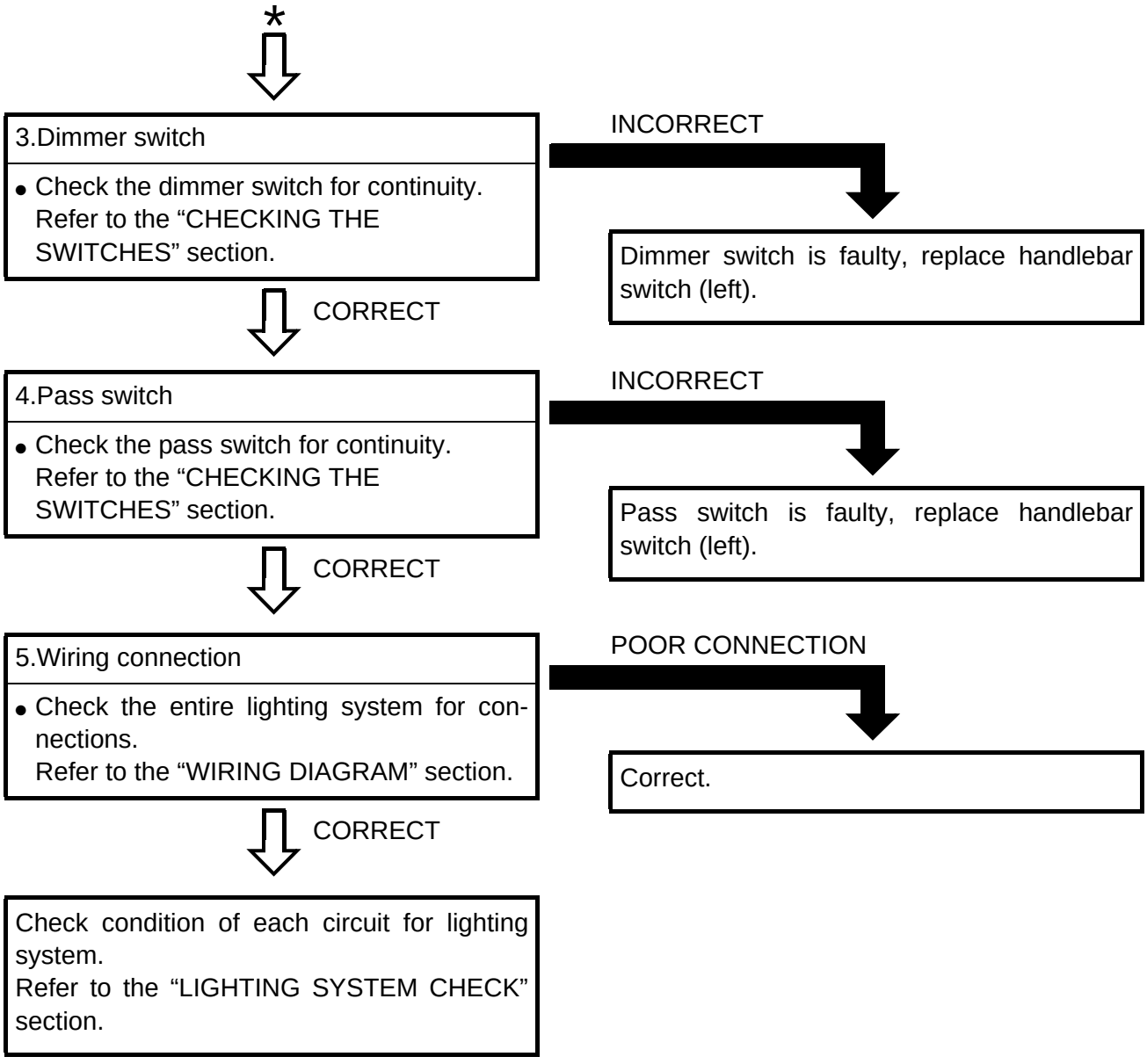
2.Lights switch

- Check the lights switch for continuity. Refer to the “CHECKING THE SWITCHES” section.

INCORRECT → Lights switch is faulty, replace handlebar switch (right).

CORRECT

*


*
3.Dimmer switch
• Check the dimmer switch for continuity. Refer to the "CHECKING THE SWITCHES" section.
INCORRECT
Dimmer switch is faulty, replace handlebar switch (left).
CORRECT
4.Pass switch
• Check the pass switch for continuity. Refer to the "CHECKING THE SWITCHES" section.
INCORRECT
Pass switch is faulty, replace handlebar switch (left).
CORRECT
5.Wiring connection
• Check the entire lighting system for connections. Refer to the "WIRING DIAGRAM" section.
POOR CONNECTION
Correct.
CORRECT
Check condition of each circuit for lighting system.
Refer to the "LIGHTING SYSTEM CHECK" section.

LIGHTING SYSTEM CHECK

1.Headlight and high beam indicator light do not come on.

1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the “CHECKING OF BULBS” section.

NO CONTINUITY

Bulb and/or bulb socket are faulty, replace.

CONTINUITY

2.Voltage

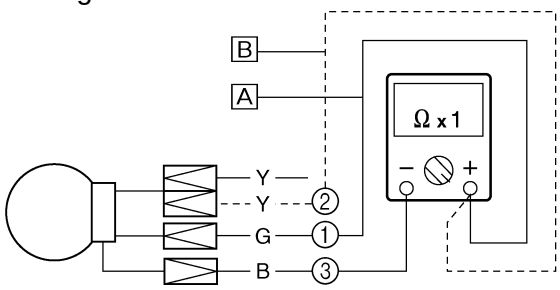
- Connect the pocket tester (DC 20 V) to the headlight and high beam indicator light leads.

Headlight:
Tester (+) lead →
Yellow ② or Green ① lead
Tester (–) lead → Black ③ lead
High beam indicator light:
Tester (+) lead → Yellow ④ lead
Tester (–) lead → Black ⑤ terminal

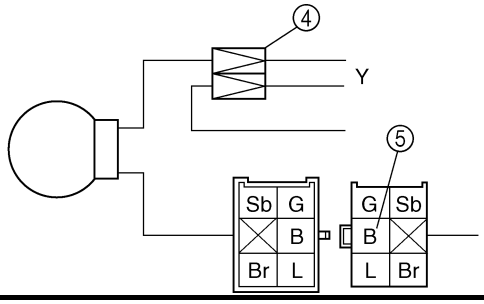
A When dimmer switch is “LO” position.
B When dimmer switch is “HI” position.

- Start the engine.
- Turn the lights switch to “ON”.
- Turn the dimmer switch to “LO” or “HI” position.
- Check for voltage (12 V) on the “Green” and “Yellow” lead at bulb socket connector.

Headlight



High beam indicator light



OUT OF SPECIFICATION

Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12 V)

This circuit is good.

2.Meter light does not come on.

1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the “CHECKING OF BULBS” section.

NO CONTINUITY

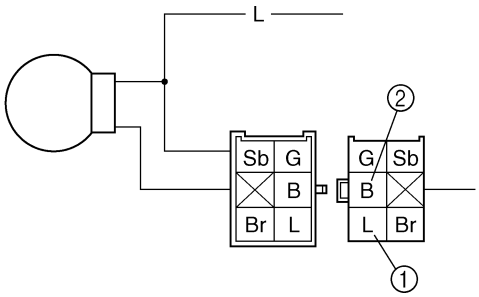
Bulb and/or bulb socket are faulty, replace.

CONTINUITY

2.Voltage

- Connect the pocket tester (DC 20 V) to the bulb socket leads.

Tester (+) lead → Blue ① terminal
Tester (–) lead → Black ② terminal



- Start the engine.
- Turn the lights switch to “ON” or “PO”.
- Check for voltage (12 V) on the “Blue” lead at the bulb socket connector.

OUT OF SPECIFICATION

Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12 V)

This circuit is good.

3.Taillight does not come on

1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the “CHECKING THE SWITCHES” section.

NO CONTINUITY

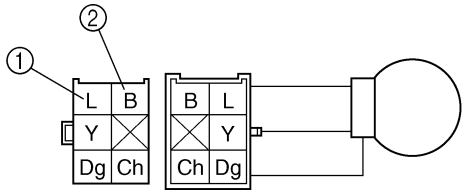
Bulb and/or bulb socket are faulty, replace.

CONTINUITY

2.Voltage

- Connect the pocket tester (DC 20 V) to the bulb socket leads.

Tester (+) lead → Blue ① terminal
Tester (–) lead → Black ② terminal



- Start the engine.
- Turn the lights switch to “ON” or “PO”.
- Check for voltage (12 V) on the “Blue” lead at the bulb socket connector.

OUT OF SPECIFICATION

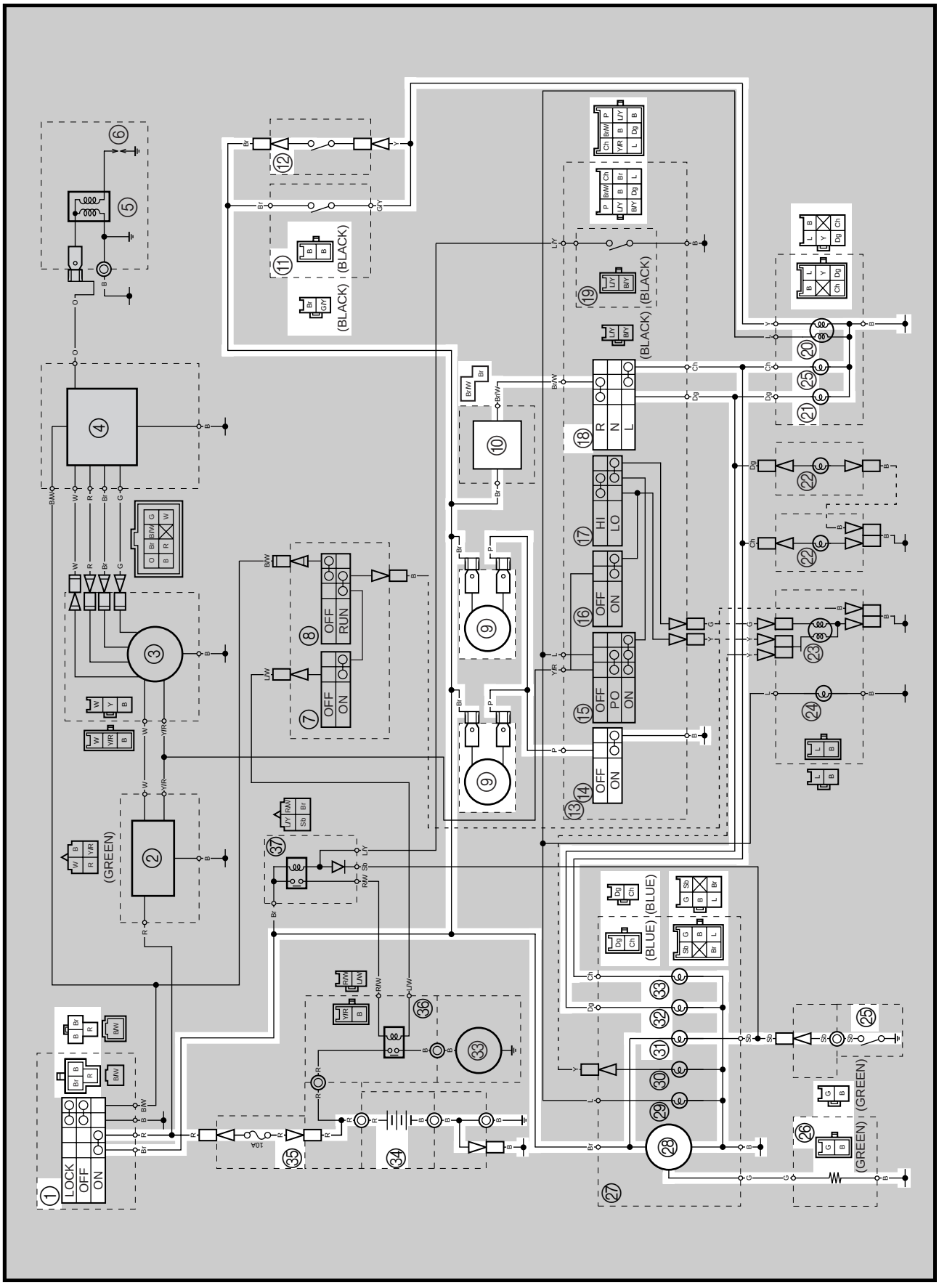
Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12 V)

This circuit is good.

SIGNALING SYSTEM

CIRCUIT DIAGRAM



① Main switch
⑨ Horn
⑩ Flasher relay
⑪ Front brake switch
⑫ Rear brake switch
⑭ Horn switch
⑱ Turn signal switch
⑳ Tail/black light
㉑ Rear turn signal light
㉒ Front turn signal light
㉕ Neutral switch
㉖ Fuel sender
㉘ Fuel gauge
㉛ Neutral indicator light
㉜ Turn indicator light
㉞ Battery
㉟ Fuse

TROUBLESHOOTING

- **FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT DO NOT COME ON.**
- **HORN DOES NOT SOUND.**
- **FUEL GAUGE DOES NOT OPERATED.**

Procedure

Check;
1.Fuse
2.Battery
3.Main switch
4.Wiring connection (entire signal system)

NOTE:

- Remove the following parts before troubleshooting.

1)Side cover (right)
2)Headlight unit
3)Seat
4)Fuel tank

- Use the following special tool (s) in this troubleshooting

Pocket tester:
90890-03112

1.Fuse

- Remove the fuse.
- Connect the pocket tester ($\Omega \times 1$) to the fuse.
- Check the fuse for continuity.
  Refer to the “FUSE INSPECTION” section in CHAPTER 3.

NO CONTINUITY → Fuse is faulty, replace it.

CONTINUITY ↓

2.Battery

- Check the battery condition.
  Refer to the “BATTERY INSPECTION” section in CHAPTER 3.

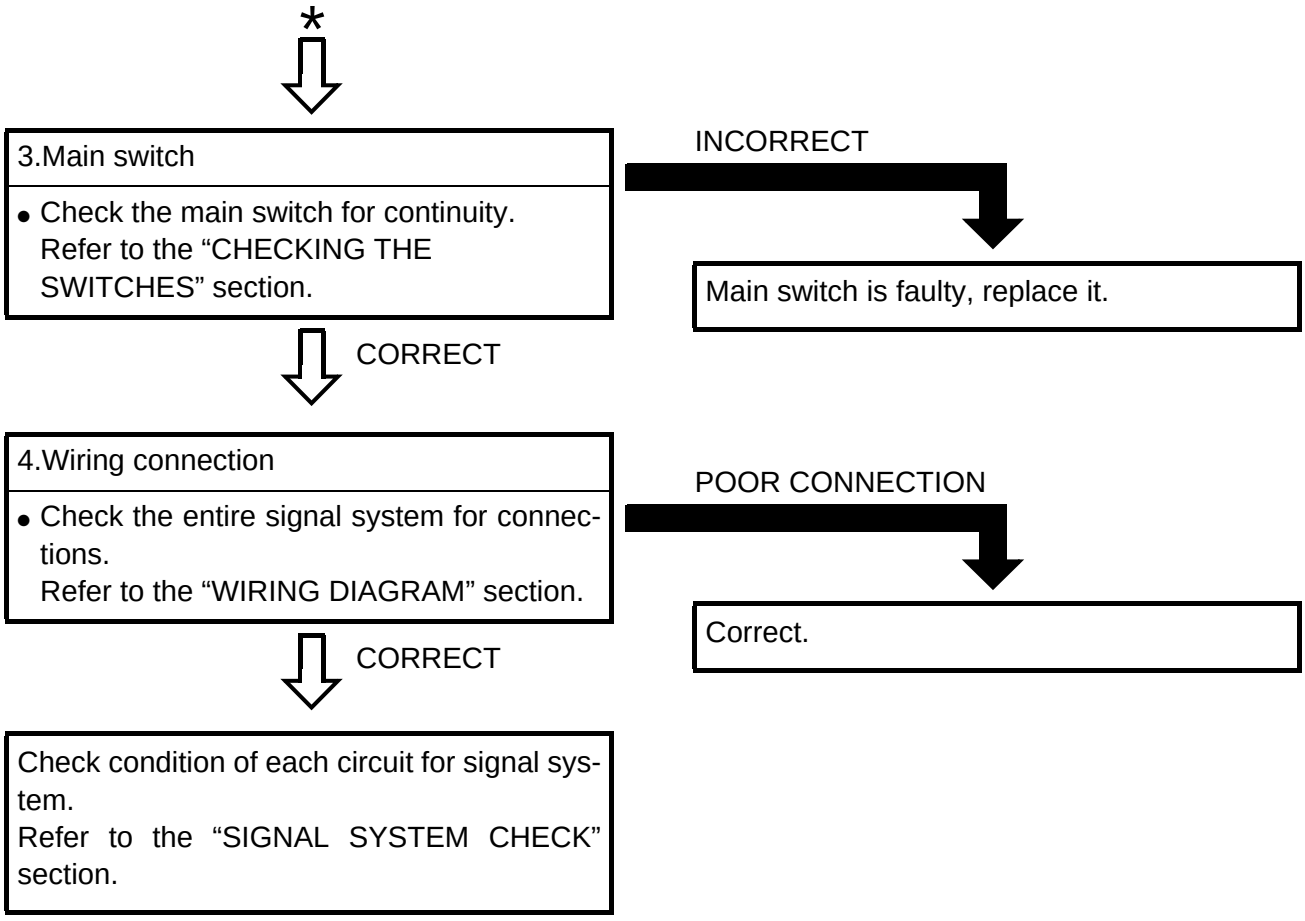
Specific gravity:
1.280 at 20°C

INCORRECT →

- Refill battery fluid.
- Clean battery terminals.
- Recharge or replace battery.

CORRECT ↓

*


*
3.Main switch
• Check the main switch for continuity.
Refer to the “CHECKING THE SWITCHES” section.
INCORRECT
Main switch is faulty, replace it.
CORRECT
4.Wiring connection
• Check the entire signal system for connections.
Refer to the “WIRING DIAGRAM” section.
POOR CONNECTION
Correct.
CORRECT
Check condition of each circuit for signal system.
Refer to the “SIGNAL SYSTEM CHECK” section.

SIGNAL SYSTEM CHECK

1.Horn does not sound.

1.Horn switch

- Check the horn switch for continuity. Refer to the “CHECKING THE SWITCHES” section.

INCORRECT

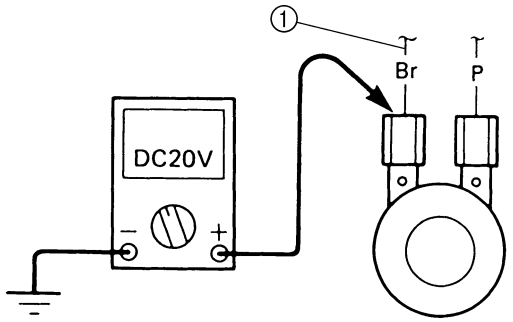
Horn switch is faulty, replace handlebar switch (left).

CORRECT

2.Voltage

- Connect the pocket tester (DC 20 V) to the horn lead.

Tester (+) lead → Brown ① lead
Tester (–) lead → Frame ground



- Turn the main switch to “ON”.
- Check for voltage (12 V) on the “Brown” lead at the horn terminal.

OUT OF SPECIFICATION

Wiring circuit from main switch to horn terminal is faulty, repair.

MEETS SPECIFICATION (12 V)

*

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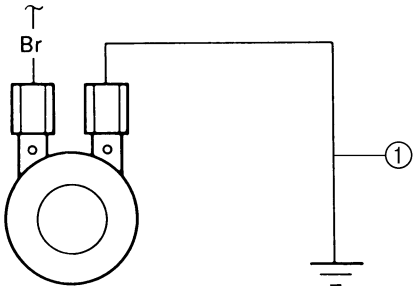
3.Horn

- Disconnect the “Pink” lead at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Turn the main switch to “ON”.



HORN IS SOUNDED

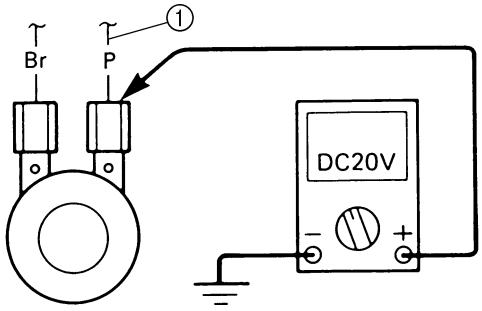
Horn is good.

HORN IS NOT SOUNDED

4.Voltage

- Connect the pocket tester (DC 20 V) to the horn at the Pink terminal.

Tester (+) lead → Pink ① lead
Tester (–) lead → Frame ground



- Turn the main switch to “ON”.
- Check for voltage (12 V) on the “Pink” lead at the horn terminal.

OUT OF SPECIFICATION

Horn is faulty, replace it.

MEETS SPECIFICATION (12 V)

Adjust or replace horn.

2.Brake light does not come on.

1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the “CHECKING OF BULBS” section.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ↓

2.Brake switch

- Check the brake switches for continuity.
  Refer to the “CHECKING THE SWITCHES” section.

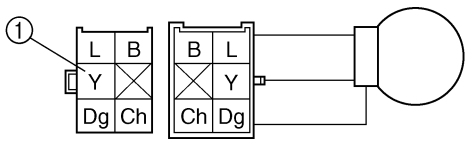
INCORRECT → Brake switch is faulty, replace it.

CORRECT ↓

3.Voltage

- Connect the pocket tester (DC 20 V) to the bulb socket connector.

Tester (+) lead → Yellow ① terminal
Tester (–) lead → Black ② terminal



- Turn the main switch to “ON”.
- The brake level is pulled in or brake pedal is stopped down.
- Check for voltage (12 V) on the “Yellow” lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12 V) ↓

This circuit is good.

3.Flasher light and/or turn indicator light do not blink.

1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the “CHECKING OF BULBS” section.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ⇩

2.Turn signal switch

- Check the turn signal switch for continuity.
  Refer to the “CHECKING THE SWITCHES” section.

INCORRECT → Turn signal switch is faulty, replace handlebar switch (left).

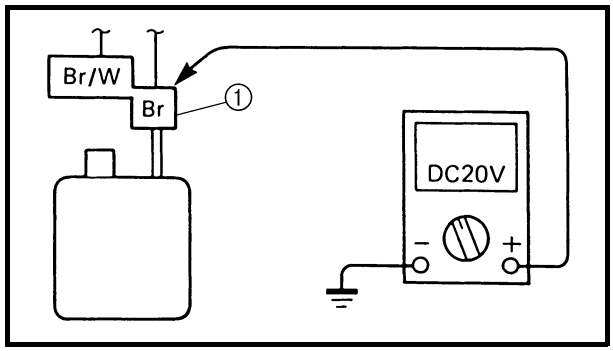
CORRECT ⇩

3.Voltage

- Connect the pocket tester (DC 20 V) to the flasher relay.

Tester (+) lead → Brown ① terminal
Tester (–) lead → Frame ground

- Turn the main switch to “ON”.
- Check for voltage (12 V) on the “Brown” lead at the flasher relay terminal.



OUT OF SPECIFICATION → Wiring circuit from main switch to flasher relay connector is faulty, repair.

MEETS SPECIFICATION (12 V) ⇩

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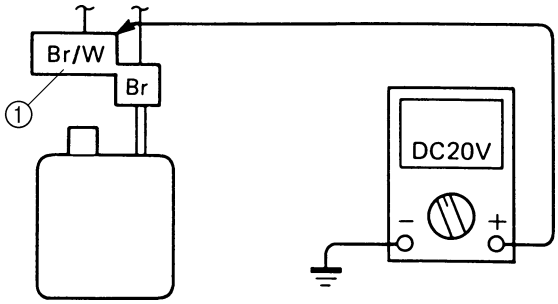
*

4.Voltage

- Connect the pocket tester (DC 20 V) to the flasher relay.

Tester (+) lead → Brown/White ① terminal
Tester (–) lead → Frame ground



- Turn the main switch to "ON".
- Check for voltage (12 V) on the "Brown/White" lead at the flasher relay terminal.

OUT OF SPECIFICATION → Flasher relay is faulty, replace it.

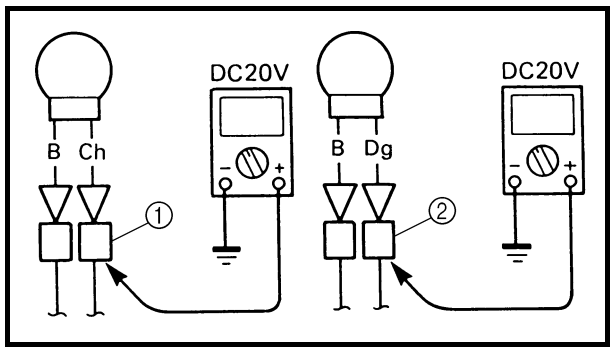
MEETS SPECIFICATION (12 V)

5.Voltage

- Connect the pocket tester (DC 20 V) to the bulb socket connector.

At flasher light (left):
Tester (+) lead → Chocolate ① lead
Tester (–) lead → Frame ground

At flasher light (right):
Tester (+) lead → Dark green ② lead
Tester (–) lead → Frame ground



- Turn the main switch to "ON".
- Turn the turn signal switch to "L" or "R".
- Check for voltage (12 V) on the "Chocolate" lead or "Dark green" lead at the bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from turn signal switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12 V)

This circuit is good.

4.Natural indicator light does not come on.

1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.
  Refer to the “CHECKING OF BULBS” section.

NO CONTINUITY → Bulb and/or bulb socket are faulty, replace.

CONTINUITY ↓

2.Neutral switch

- Check the neutral switch for continuity.
  Refer to the “CHECKING THE SWITCHES” section.

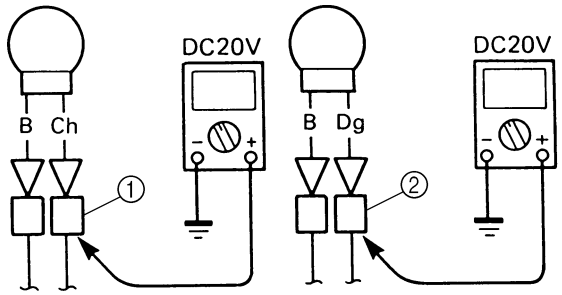
INCORRECT → Neutral switch is faulty, replace it.

CORRECT ↓

3.Voltage

- Connect the pocket tester (DC 20 V) to the bulb socket connector.

Tester (+) lead → Brown ① terminal
Tester (–) lead → Frame ground



- Turn the main switch to “ON”.
- Check for voltage (12 V) on the “Brown” lead at bulb socket connector.

OUT OF SPECIFICATION → Wiring circuit from main switch to bulb socket connector is faulty, repair.

MEETS SPECIFICATION (12 V) ↓

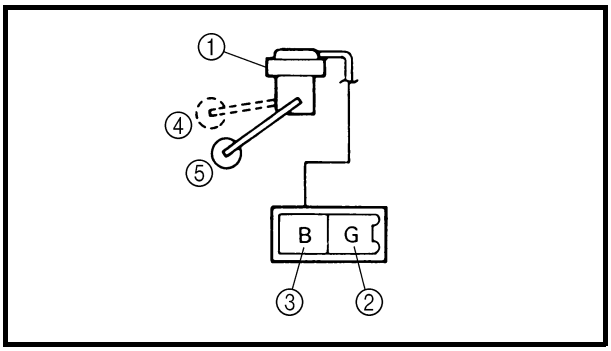
This circuit is good.

5.Fuel meter does not operate.

1.Fuel sender

- Remove the fuel sender ① from the fuel tank.
- Connect the pocket tester to the fuel sender coupler.

Tester (+) lead → Green ② terminal
Tester (–) lead → Black ③ terminal



- Check the fuel sender for the specified resistance.

Fuel sender resistance (Up ④):
(Ω × 1)
4 ~ 10 Ω at 20°C
Fuel sender resistance (Down ⑤):
(Ω × 10)
90 ~ 100 Ω at 20°C

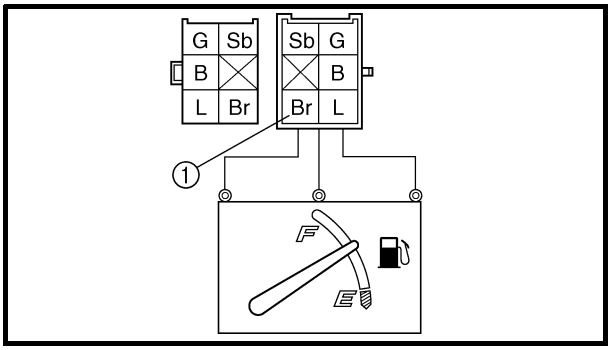
OUT OF SPECIFICATION → Replace fuel sender.

BOTH MEET SPECIFICATION

2.Voltage

- Connect the pocket tester (DC 20 V) to the fuel meter coupler.

Tester (+) lead → Brown ① terminal
Tester (–) lead → Black ② terminal



- Turn the main switch to “ON”.
- Check for voltage (12 V) on the “Brown” lead at the fuel meter coupler.

OUT OF SPECIFICATION → Check the entire signal system for connections.

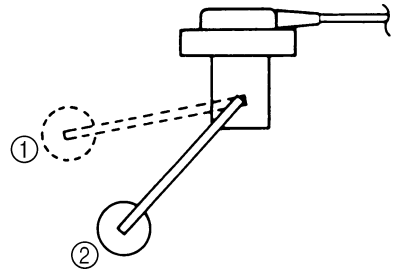
MEETS SPECIFICATION (12 V)

*

*

3.Fuel meter

- Move the float to “UP ①” or “DOWN ②”.



- Turn the main switch to “ON”.
- Check the fuel meter needle moves “FULL” or “EMPTY”.

MOVES

4.Wiring connection

- Check the entire signal system for connection.
  Refer to the “WIRING DIAGRAM” section.

NOTE:
Before reading the meter, stay put the float for more than three minutes respectively at “UP” or “DOWN”.

DOES NOT MOVE

Replace fuel meter.

CHAPTER 8.
TROUBLESHOOTING

TROUBLESHOOTING 8-1
ELECTRICAL SYSTEM 8-1
COMPRESSION SYSTEM 8-2
INTAKE AND EXHAUST SYSTEM 8-3

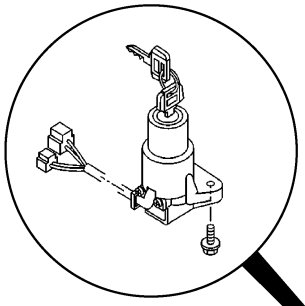
TROUBLESHOOTING

TROUBLESHOOTING

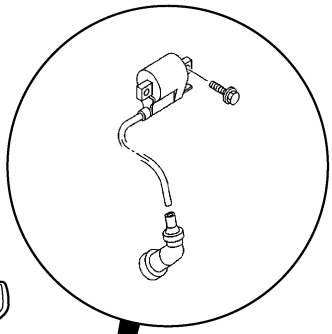
ELECTRICAL SYSTEM

CHECK ALL WIRES CONNECTIONS

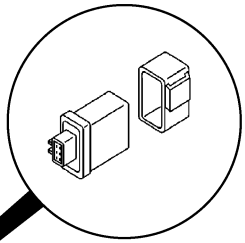
MAIN SWITCH (see page 7-4)
- Main switch is shorted



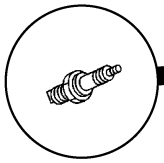
IGNITION COIL (see page 7-11)
- Primary or secondary windings are broken or faulty
- High tension lead is faulty
- Plug cap is faulty

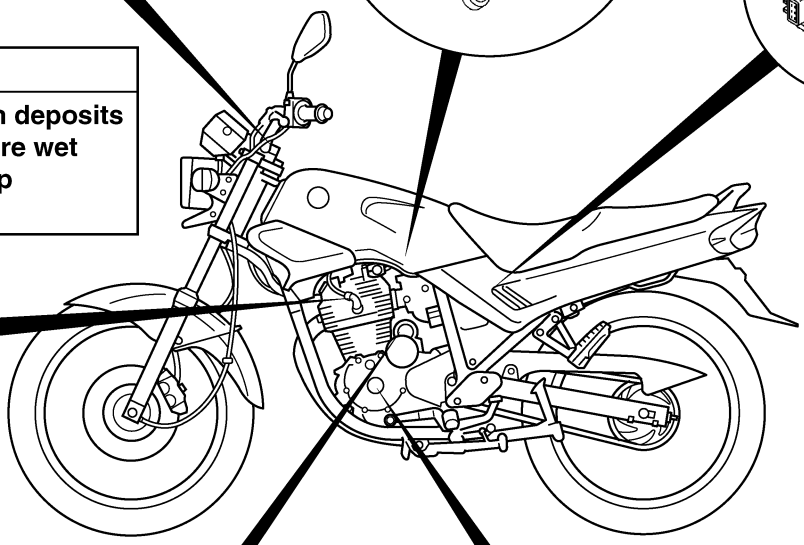


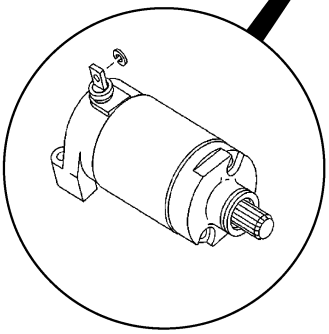
C.D.I. unit
- C.D.I. unit is broken



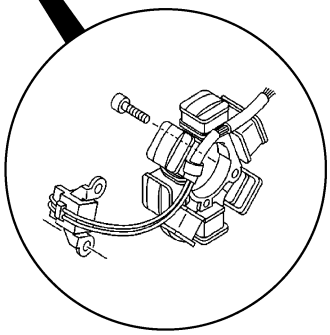
SPARK PLUG
- Many carbon deposits
- Electrodes are wet
- Improper gap
- Broken





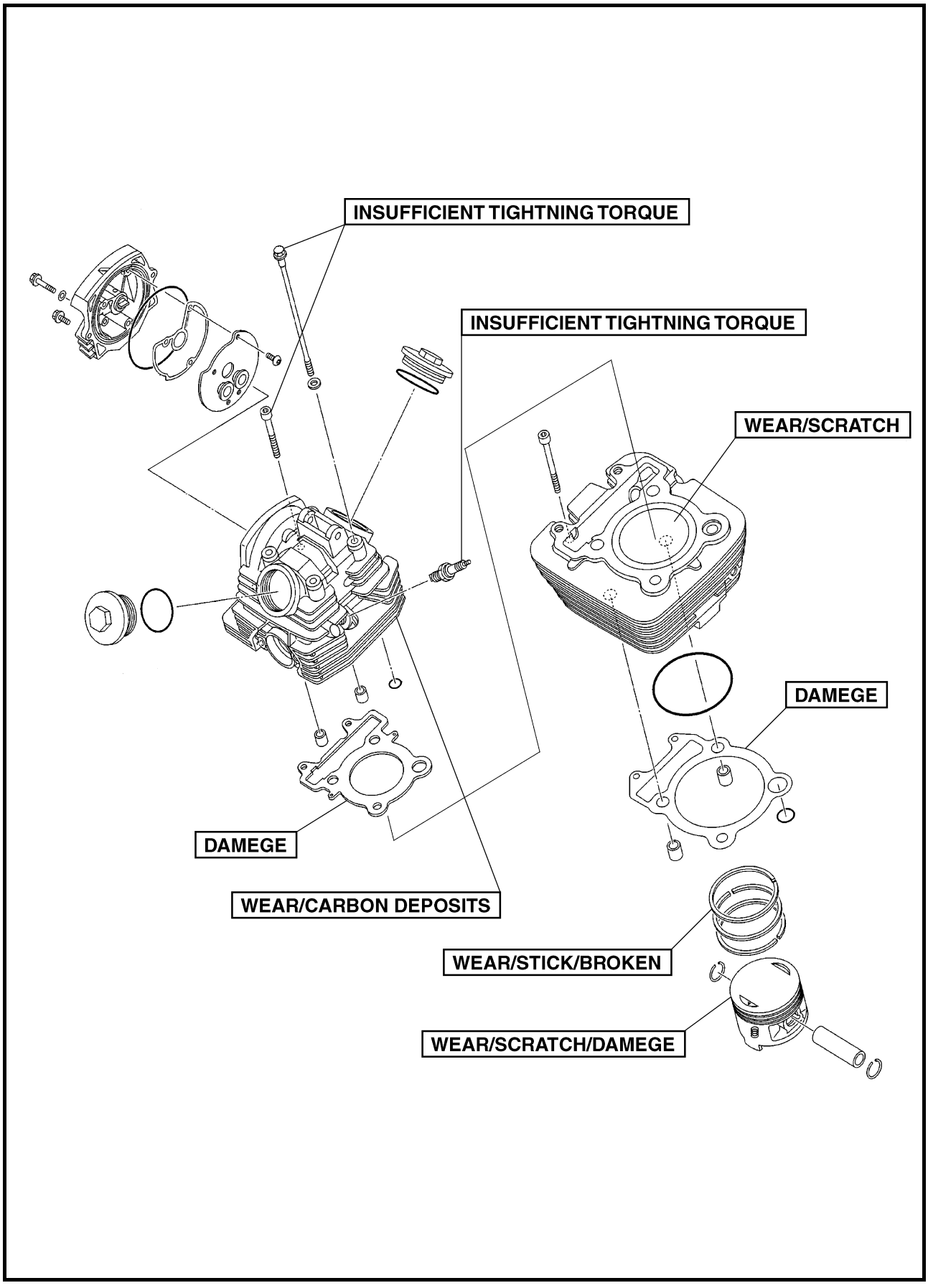


STARTER MOTOR (see page 7-19)
- Starter motor is broken or faulty
- Starter relay is broken
- Starter switch is broken

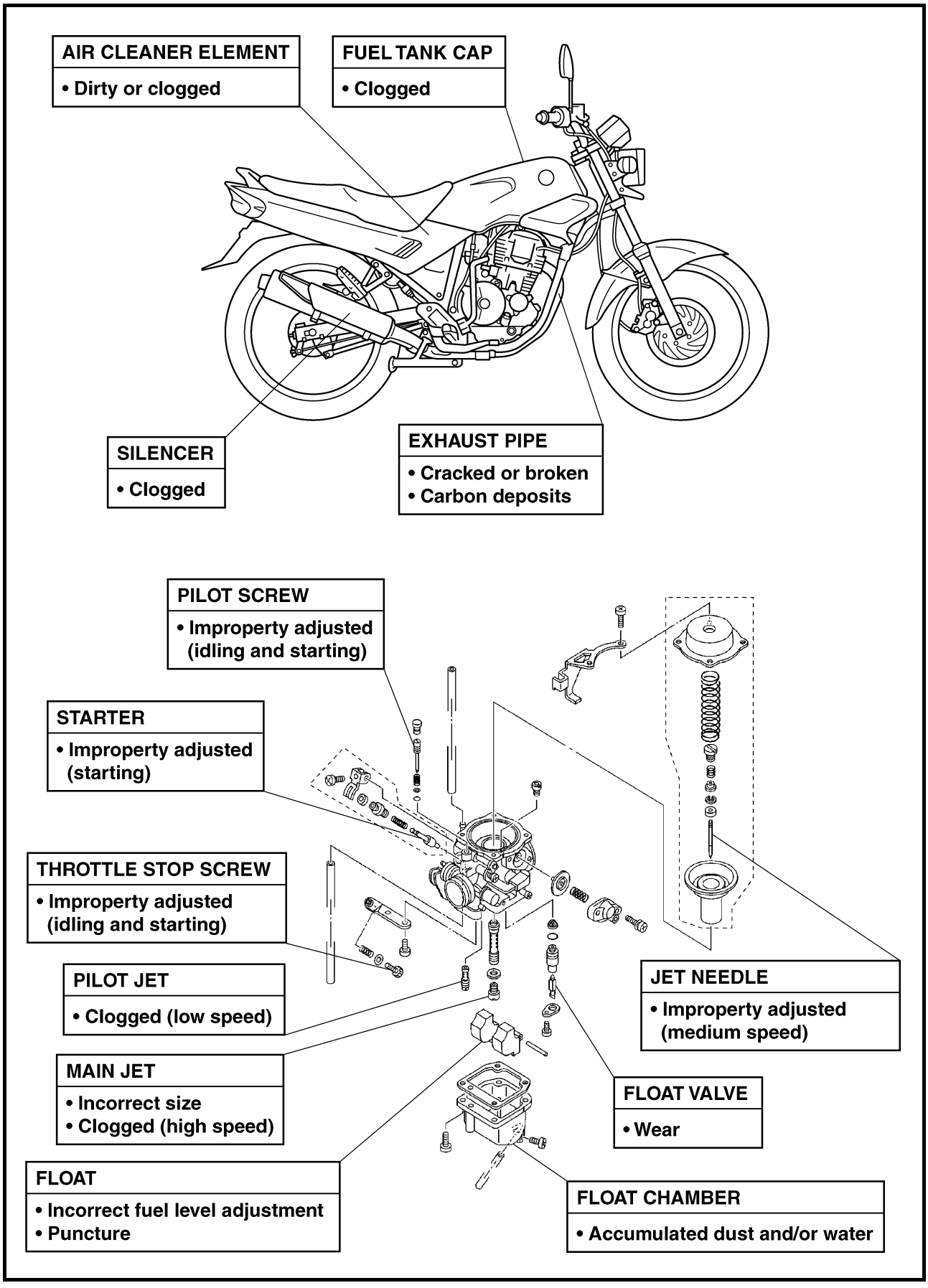


CHARGING COIL (see page 7-27) / PICKUP COIL (see page 7-12)
- Windings are broken

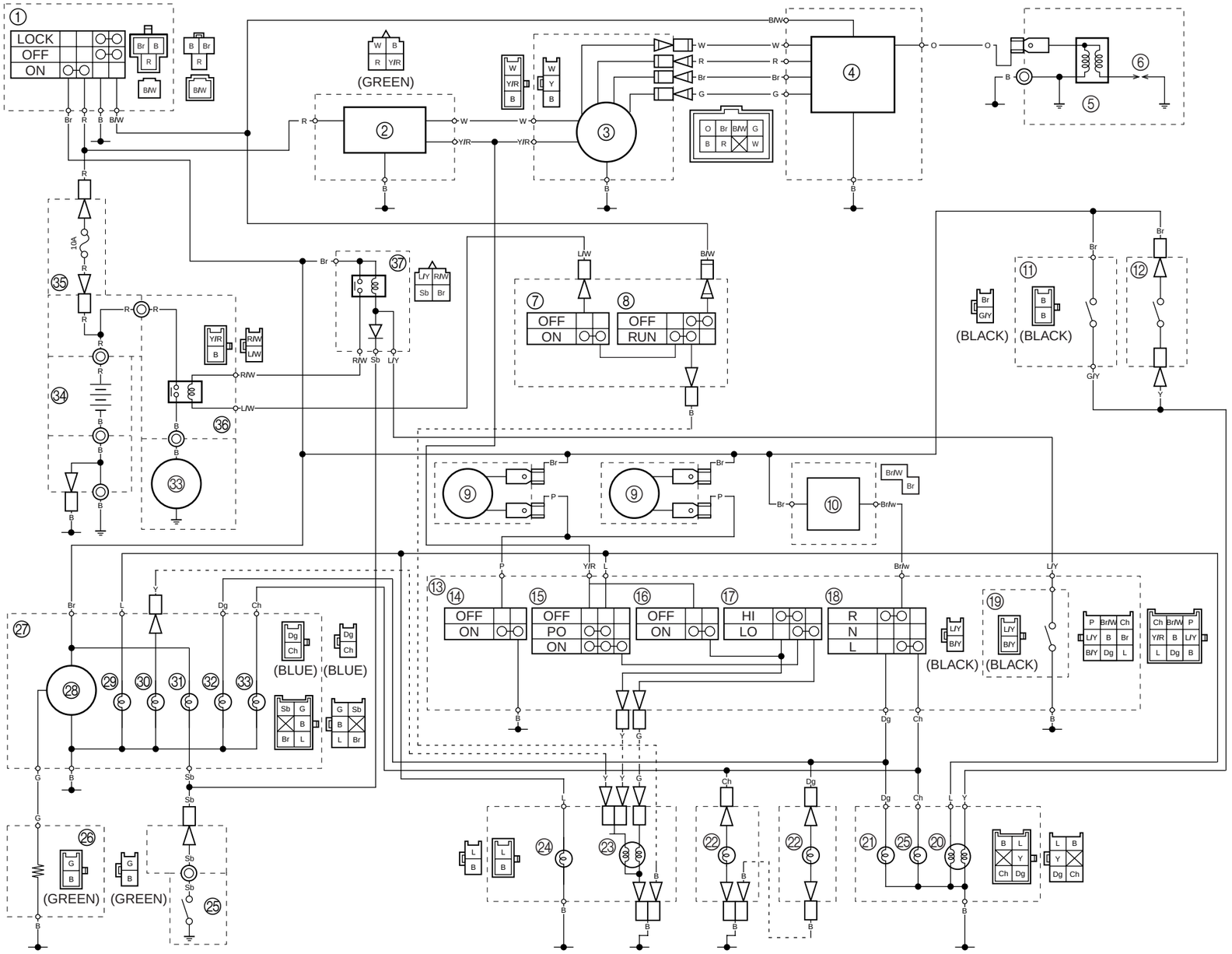
COMPRESSION SYSTEM



INTAKE AND EXHAUST SYSTEM



SX-4 WIRING DIAGRAM



① Main switch
② Rectifier/regulator
③ CDI magneto
④ CDI unit
⑤ Ignition coil
⑥ Spark plug
⑦ Start switch
⑧ Engine stop switch
⑨ Horn
⑩ Flasher relay
⑪ Front brake switch
⑫ Rear brake switch
⑬ Handlebar switch (left)
⑭ Horn switch
⑮ Lights switch
⑯ Pass switch
⑰ Dimmer switch
⑱ Turn signal switch
⑲ Clutch switch
⑳ Tail/brake light
㉑ Rear flasher light
㉒ Front flasher light
㉓ Headlight
㉔ Auxiliary light
㉕ Neutral switch
㉖ Fuel sender
㉗ Meter
㉘ Fuel gauge
㉙ Meter light
㉚ High beam indicatior light
㉛ Neutral indicator light
㉜ Turn indicator light
㉝ Starter motor
㉞ Battery
㉟ Fuse
㊱ Starter relay
㊲ Starting circuit cut-off relay

COLOR CODE

B .....Black	R .....Red	Br/W.....Brown/White	R/W..... Red/White
Br.....Brown	Sb .....Sky blue	Ch .....Chocolate	Y/R..... Yellow/Red
G.....Green	W .....White	Dg .....Dark green	
L.....Blue	Y .....Yellow	G/Y.....Green/Yellow	
O.....Orange	B/W.....Black/White	L/W .....Blue/White	
P .....Pink	B/Y.....Black/Yellow	L/Y .....Blue/Yellow	

YAMAHA MOTOR CO., LTD.
2500 SHINGAI IWATA SHIZUOKA JAPAN

YAMAHA

Scorpio (new)

SUPPLEMENTARY SERVICE MANUAL

5BP-F8197-B1

PENDAHULUAN

Buku Service Manual tambahan ini, dibuat untuk melengkapi Service Manual Scorpio yang sudah ada. Untuk mendapatkan petunjuk cara-cara perbaikan Sepeda Motor Scorpio dengan sempurna, sebaiknya buku ini dipadu dengan Buku Service Manual dibawah ini :

SERVICE MANUAL SCORPIO : 5BP-F8197-B0

EAS00000

SERVICE MANUAL TAMBAHAN
SCORPIO

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Cetakan pertama, Maret, 2006
dilarang memperbanyak tanpa seijin
PT Yamaha Indonesia Motor Manufacturing
dialih bahasakan oleh Technical Publication
PT Yamaha Indonesia Motor Manufacturing
di cetak di Indonesia

EAS00002

KATA PENGANTAR

Buku ini dibuat oleh Yamaha Motor Company, Ltd. dan dialih bahasakan oleh, Technical Publication Service Division PT Yamaha Indonesia Motor Manufacturing. diharapkan bisa dipakai oleh Mekanik Bengkel Resmi Yamaha. Kami menyadari bahwa tidak mungkin menjelaskan seluruh pelajaran teknik perbaikan sepeda motor dalam satu buku saja. sehingga kami menyarankan kepada para mekanik harus terlebih dahulu menguasai dasar-dasar perawatan sepeda motor Yamaha dengan mengikuti training-training reguler yang diadakan oleh Yamaha. tanpa pengetahuan ini, usaha perbaikan akan kurang sempurna.

Yamaha Motor Indonesia akan terus menerus berusaha meningkatkan mutu produksinya, untuk itu jika ada perubahan yang mendasar, dalam spesifikasi dan prosedur pengerjaan, kami akan sampaikan keseluruh jaringan Yamaha melalui buletin **"Service Information"**

CATATAN

Bentuk dan spesifikasi, sewaktu-waktu dapat berubah mengikuti perkembangan model

EAS00004

INFORMASI PENTING YANG ADA DIDALAM BUKU PETUNJUK INI :

Informasi penting secara khusus ditandai dengan tanda-tanda sebagai berikut :

⚠ Simbol ini, mengharuskan anda BERHATI-HATI MENYANGKUT KESELAMATAN ANDA.

⚠WARNING memberikan petunjuk khusus, yang harus diikuti untuk menghindari kecelakaan bagi pengendara dan orang lain yang sedang memperbaiki sepeda motor.

PERHATIAN Perlu perhatian khusus, yang harus diikuti untuk menghindari kerusakan pada sepeda motor.

CATATAN: Memberikan keterangan tambahan, untuk mempermudah pengerjaan.

EASF0007

TEKNIK MEMBACA CEPAT BUKU PETUNJUK

SUSNAN BUKU PETUNJUK

Buku ini terdiri dari beberapa BAB utama yang didalamnya terdapat beberapa judul (lihat "simbol")

Judul pertama ① BAB yang disertai simbol, terletak disudut kanan atas, pada setiap halaman.
Judul kedua ② Judul ini adalah judul bagian BAB yang terletak hanya pada halaman pertama dari tiap-tiap bagian, judul ini terletak disudut kiri atas halaman.

Judul ketiga ③ Judul ini adalah judul yang lebih spesifik

FORMAT BUKU

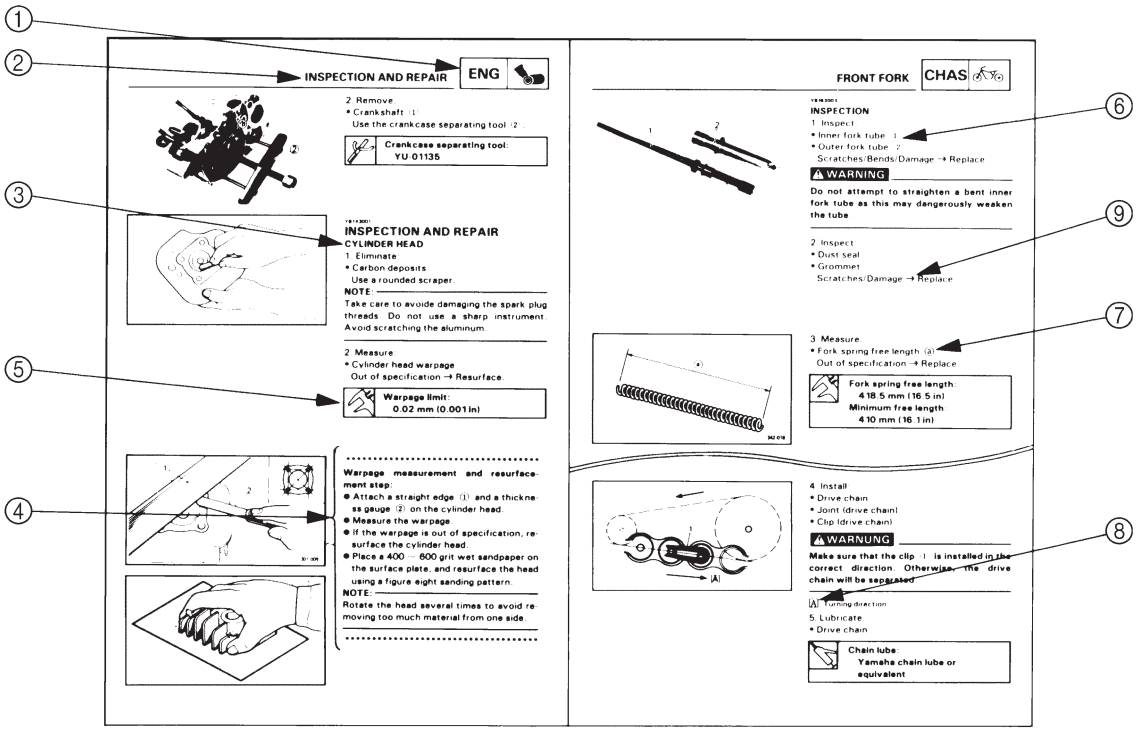
Semua prosedur dalam buku ini dikemas dalam rangkaian tahap demi tahap, sehingga petunjuk-petunjuk yang ada secara lengkap dapat diterima dengan mudah oleh para mekanik.
Petunjuk yang ada meliputi berbagai hal, antara lain tentang cara membongkar, memperbaiki, dan pemeriksaan, jika ada prosedur yang penting, dan perlu perhatian khusus ④kami tambahkan gambar "▲" (segi tiga hitam) dengan tanda seru didalamnya " ! ".

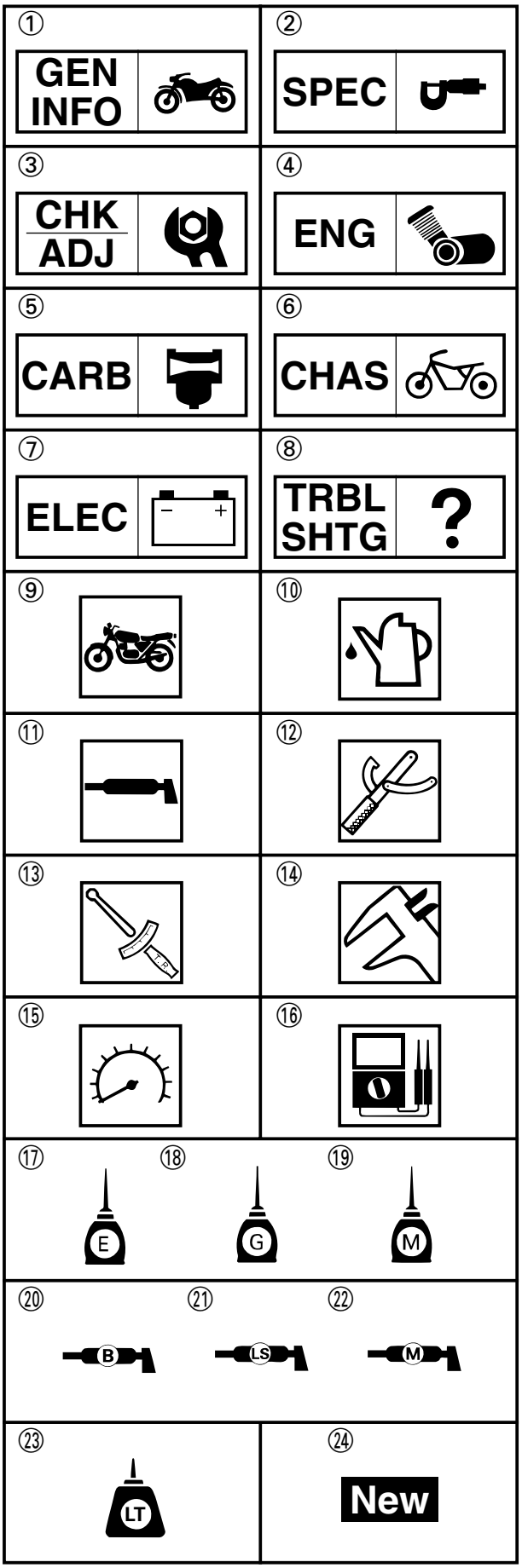
INFORMASI PENTING

- Data spesifikasi dan special tool, diinformasikan dalam frame dengan gambar alat ⑤ .
- Angka didalam lingkaran ⑥ menunjukkan nama komponen dan penjelasan yang melengkapi gambar ⑦, ada kalanya kita gunakan huruf didalam segi empat/box ⑧ .
- Untuk menjelaskan tindakan lebih lanjut, kita gunakan tanda panah. sebagai contoh, tindakan lebih lanjut jika diluar spesifikasi dengan simbol panah --> ⑨ .

DIAGRAM

Semua BAB, dilengkapi dengan gambaran sebelum dibongkar, hal ini untuk mempermudah prosedur yang benar cara memasang dan membongkar.





SIMBOL

Simbol disamping ini, tidak selalu berhubungan dengan setiap sepeda motor.
Simbol ① hingga ⑧ menggambarkan isi setiap BAB.

① Informasi umum
② Spesifikasi
③ Perawatan berkala dan penyetelan
④ Mesin
⑤ Karburator
⑥ Rangka/Chassis
⑦ Sistim kelistrikan
⑧ Mengatasi masalah/Troubleshooting

Simbol ⑨ hingga ⑯ menjelaskan sebagai berikut :

⑨ Perbaikan dengan mesin terpasang
⑩ Menambah cairan
⑪ Pelumasan
⑫ Alat spesial/special tool
⑬ Torsi pengencangan
⑭ Batas keausan/kelonggaran
⑮ Putaran mesin
⑯ Data kelistrikan

Simbol ⑰hingga ㉒pada gambar diagram menunjukkan tipe pelumas dan bagian yang perlu dilumasi.

⑰ Oli mesin
⑱ Oli gear
⑲ Oli Molybdenum-disulfide
⑳ Gemuk bearing roda/wheel-bearing grease
㉑ Gemuk Lithium-soap-based
㉒ Gemuk Molybdenum-disulfide

Simbol ㉓hingga ㉔pada gambar diagram menunjukkan perintah sebagai berikut :

㉓ Berikan cairan pengunci (LOCTITE®)
㉔ Ganti dengan spare part baru

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DIAGRAM KELISTRIKAN SCORPIO

SPESIFIKASI

SPESIFIKASI UMUM

Model	**SCORPIO**
Kode Model :	5BP4
Berat : Dengan Oli dan bensin penuh	 136 kg (300 lb)
Busi / Spark plug: Tipe / Pabrik pembuat Kerenggangan	 D8EA - 9/NGK 0.8 – 0.9 mm (0.0315 – 0.0354 in)
Tekanan angin ban (kondisi dingin) Berat: Dengan oli dan bensin penuh Beban maksimum *	 136 kg (300 lb) 180 kg (396 lb) *Berat total: barang bawaan, pengendara, penumpang dan aksesoris

SPESIFIKASI PERAWATAN

MESIN

Model		Scorpio
Karburator :		
I.D. mark		5BP4 00
Main jet	(M.J.)	#110
Main air jet	(M.A.J.)	#120
Jet needle	(J.N.)	4EL10-2
Needle jet	(N.J.)	O-2M
Pilot jet	(P.J.)	#17.5
Pilot air jet	(P.A.J. #1)	#90
	(P.A.J. #2)	0.9
Setelan Pilot scre	(P.S.)	3 putaran keluar
Pilot outlet	(P.O.)	ø0.8
Bypass	(B.P.1)	ø0.9
	(B.P.2)	ø0.8
	(B.P.3)	ø0.8
Valve seat size	(V.S.)	ø2.0
Starter jet	(G.S.1)	#25
	(G.S.2)	0.7
Ketinggian bahan bakar		3,8 – 5,8 mm (0.15 – 0.23 in) dibawah sambungan rumah pelampung
Putaran langsam mesin		1.350 – 1.450 r/min

TORSI PENGENCANGAN BAUT/TIGHTENING TORQUE

komponen yang dikencangkan	nama	ukuran ulir	Q'ty	Torsi pengencangan			Keterangan
				Nm	m·kg	ft·lb	
Pipa Air induction system	Baut	M6	2	10	1.0	7.2	
Unit Air cut-off valve	Baut	M6	2	10	1.0	7.2	

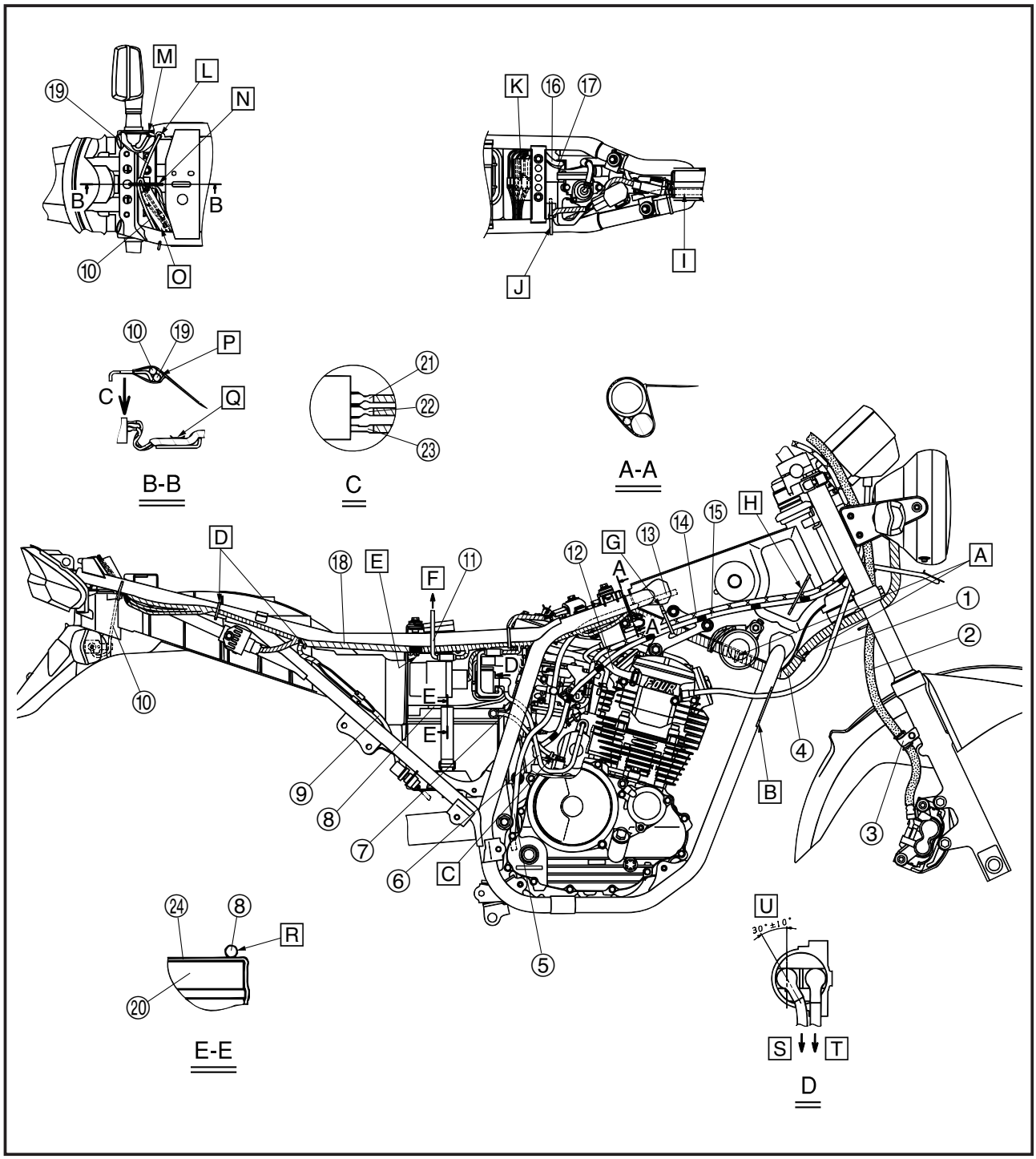
RANGKA/CHASSIS

Keterangan		Scorpio
Tromol rem belakang :		
Tipe		Leading dan trailing
Diameter dalam tromol		130 mm (5.12 in)
<Limit>		<131 mm (5.16 in)>
Ketebalan kampas rem		4 mm (0.16 in)
<Limit>		<1 mm (0.04 in)>
Panjang per kampas rem	Per 1	52 mm (2.05 in)
	Per 2	48 mm (1.89 in)

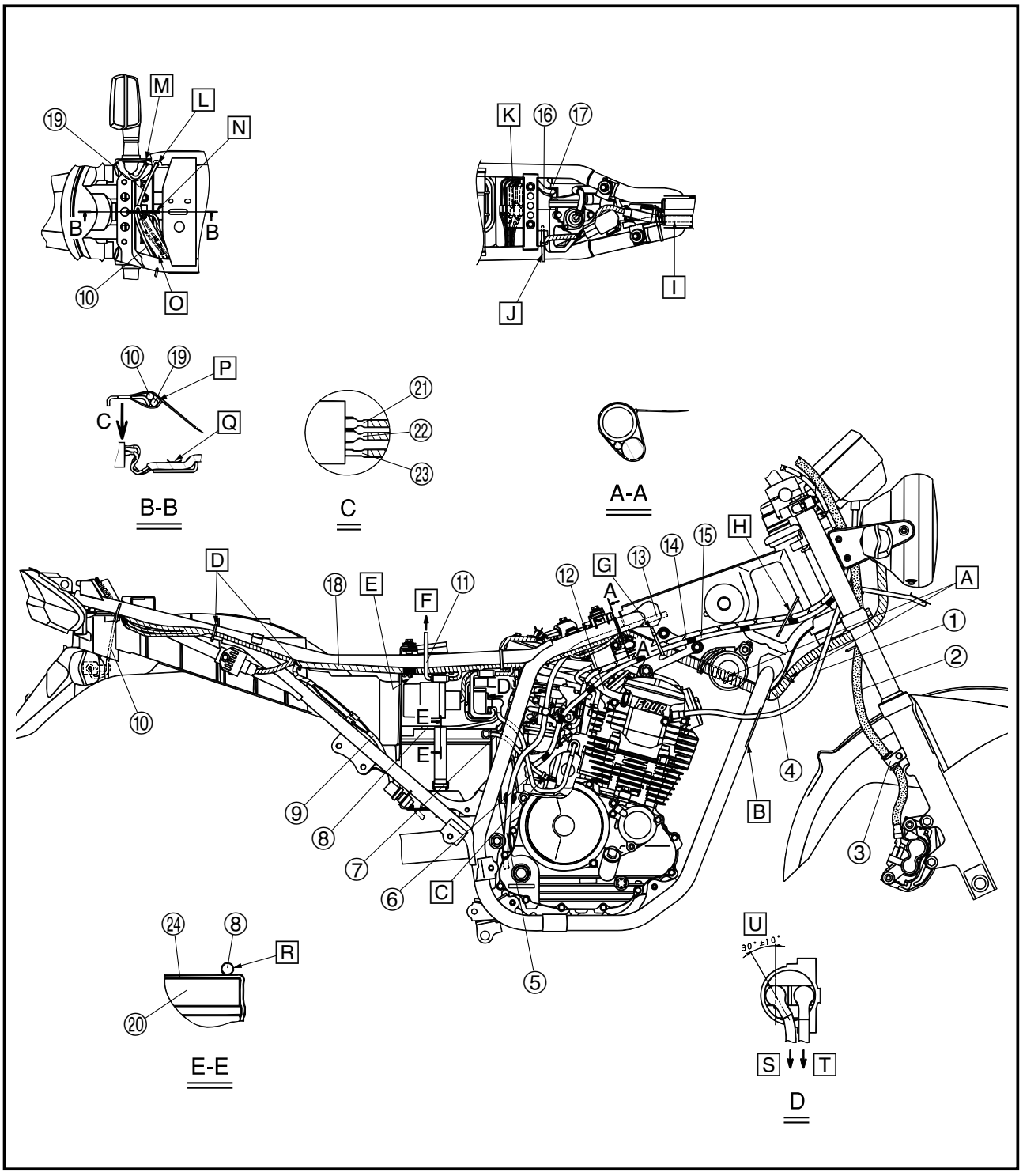
JALUR KABEL

① Kabel Tachometer
② Selang rem
③ Holder selang rem
④ Kabel bodi
⑤ Selang pernafasan
⑥ Kabel motor starter
⑦ Kabel negative Battery
⑧ Kabel positive Battery
⑨ Kabel switch rem belakang
⑩ Kabel sinyal belok belakang (sebelah kanan)
⑪ Kabel Fuel sender
⑫ Selang pernafasan
⑬ Selang pernafasan
⑭ Kabel gas/Throttle cable
⑮ Kabel kopling
⑯ Kabel magnet
⑰ Kabel switch netral
⑱ Kabel bodi
⑲ Kabel sinyal belok belakang (sebelah kiri)
⑳ Battery
㉑ Kabel kuning
㉒ Kabel biru
㉓ Kabel hitam
㉔ Karet pengikat Battery

[A] Klem kabel bodi
[B] Masukkan kabel tachometer kedalam guide.
[C] Tempatkan terminal dibelakang bodi mesin
[D] ikat kabel bodi dengan plastik pengikat.
[E] Ikat kabel bodi pada bagian isolasi putih

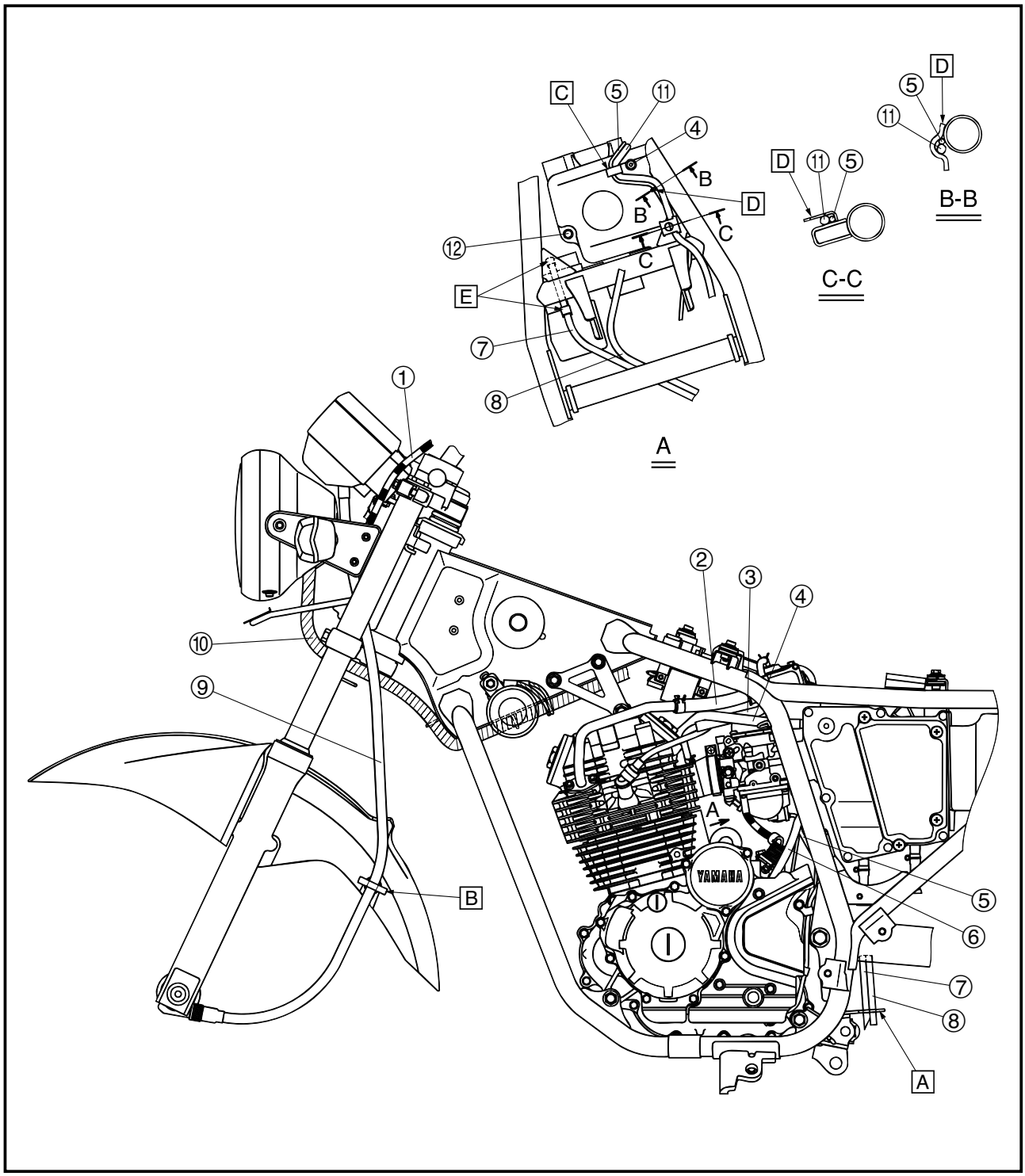


F ke tangki bensin
G Ikat kabel gas dan kabel kopling dan jangan sampai kabel ko0ling menyentuh selang pernafasan mesin pada saat tangkai kemudi dibelokkan ke kiri. arahkan ujung klem menghadap ke atas
H Ikat kabel gas dan kabel kopling
I Masukkan selang pernafasan mesin kedalam rangka
J Ikat kabel bodi dan dan arahkan ujung klem menghadap kedalam .
K Ikat kabel magnet dan kabel switch netral dan tekan kabel kearah dalam dari holder.
L Masukkan kabel sein kedalam lubang yang terdapat pada fender belakang sebelah kanan
M Masukkan kabel lampu sinyal kedalam special washer (kanan dan kiri).
N Arahkan ke arah depan
O Bungkus kabel seperti pada gambar
P Jangan mengikat pada kabel telanjang .
Q Jangan mengikat pada kabel yang telanjang
R Jepit kabel positive Battery pada pengikat karet Battery
S Ke motor starter
T Ke battery
U 30°±10°



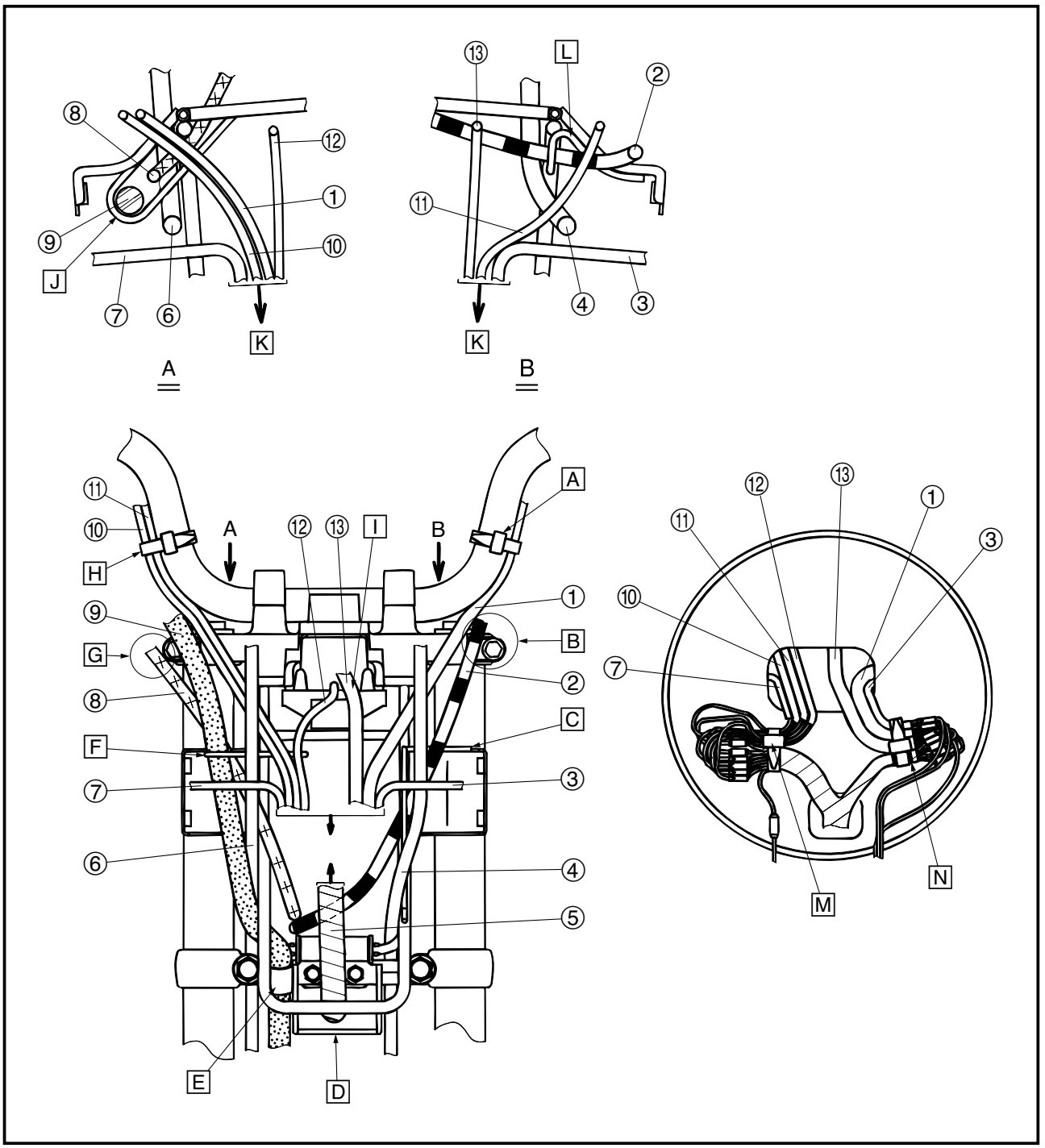
① Kabel kopling
② Selang Air induction
③ Selang Vacuum sensing
④ Selang pernafasan
⑤ Kabel switch netral
⑥ Kabel Magneto
⑦ Selang pernafasan Battery
⑧ selang over flow karburator
⑨ Kabel speedometer
⑩ Kabel bodi
⑪ kabel Magneto
⑫ Selang Bend

[A] Clamp selang pernafasan Battery, dan selang karburator over flow
[B] Tepatkan kabel speedometer kedalam holder.
[C] Clamp kabel magneto dan kabel switch netral
[D] Clamp kabel switch netral, terlebih dahulu dan selanjutnya clamp kabel magneto.
[E] Clamp selang pernafasan Battery



① kabel saklar tangkai kemudi
② kabel kopling
③ Kabel sinyal belok (kiri)
④ Kabel speedometer
⑤ Kabel bodi
⑥ Kabel Tachometer
⑦ Kabel sinyal belok (kanan)
⑧ Kabel gas
⑨ Selang rem
⑩ Kabel saklar rem depan
⑪ Kabel saklar tangkai kemudi
⑫ Kabel kunci kontak
⑬ Kabel meter

[A] Clamp kabel saklar tangkai kemudi
[B] Tepatkan klem kabel kopling ke-arah dalam baut pengunci handel crown.
[C] Masukkan kabel kopling kedalam guide penuntun.
[D] Masukkan kabel bodi kedalam guide penuntun.
[E] Clamp selang rem.
[F] Masukkan selang rem, kabel gas kedalam guide penuntun
[G] Tepatkan kabel gas diluar baut pengunci handle crown.
[H] Clamp kabel saklar tangkai kemudi dan kabel switch rem
[I] Kabel main switch jangan tertarik dan tepatkan dengan kabel meter
[J] Clamp selang rem dan kabel gas.
[K] Ke head lamp
[L] Clamp kabel kopling
[M] Clamp kabel bodi, kabel lampu sein, kabel switch rem depan kabel saklar tangkai kemudi dan kabel kunci kontak di bagian pelindung.
[N] Clamp kabel bodi, kabel sinyal belok,, saklar tangkai kemudi kabel lampu meter, pada posisi isolasi putih.

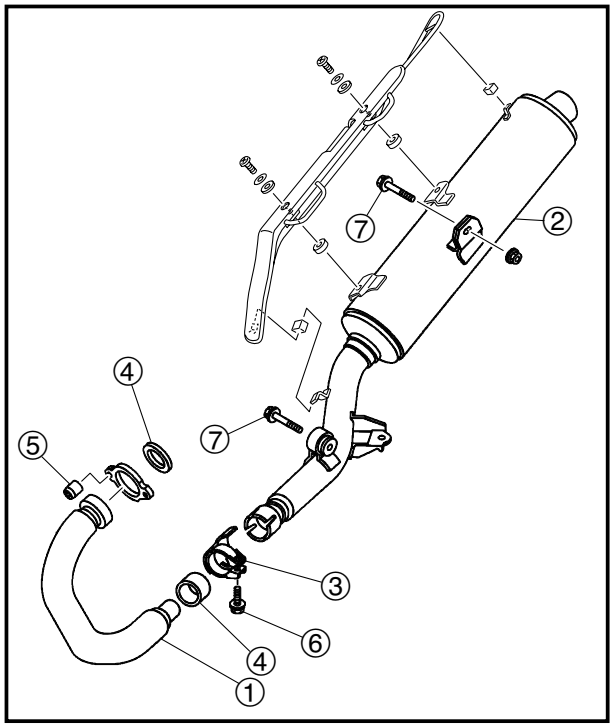


PEMERIKSAAN BERKALA DAN PENYETELAN.

MESIN

MEMERIKSA SISTIM PEMBUANGAN

1. Periksa:
 • Pipa Exhaust ①
 • Knalpot/Muffler ②
 Retal/rusak/bocor → perbaiki
 • Joint pipa pembuangan ③
 • Gasket ④
 Rusak/bocor → perbaiki
2. Kencangkan :
 • Pipa Muffler dan exhaust

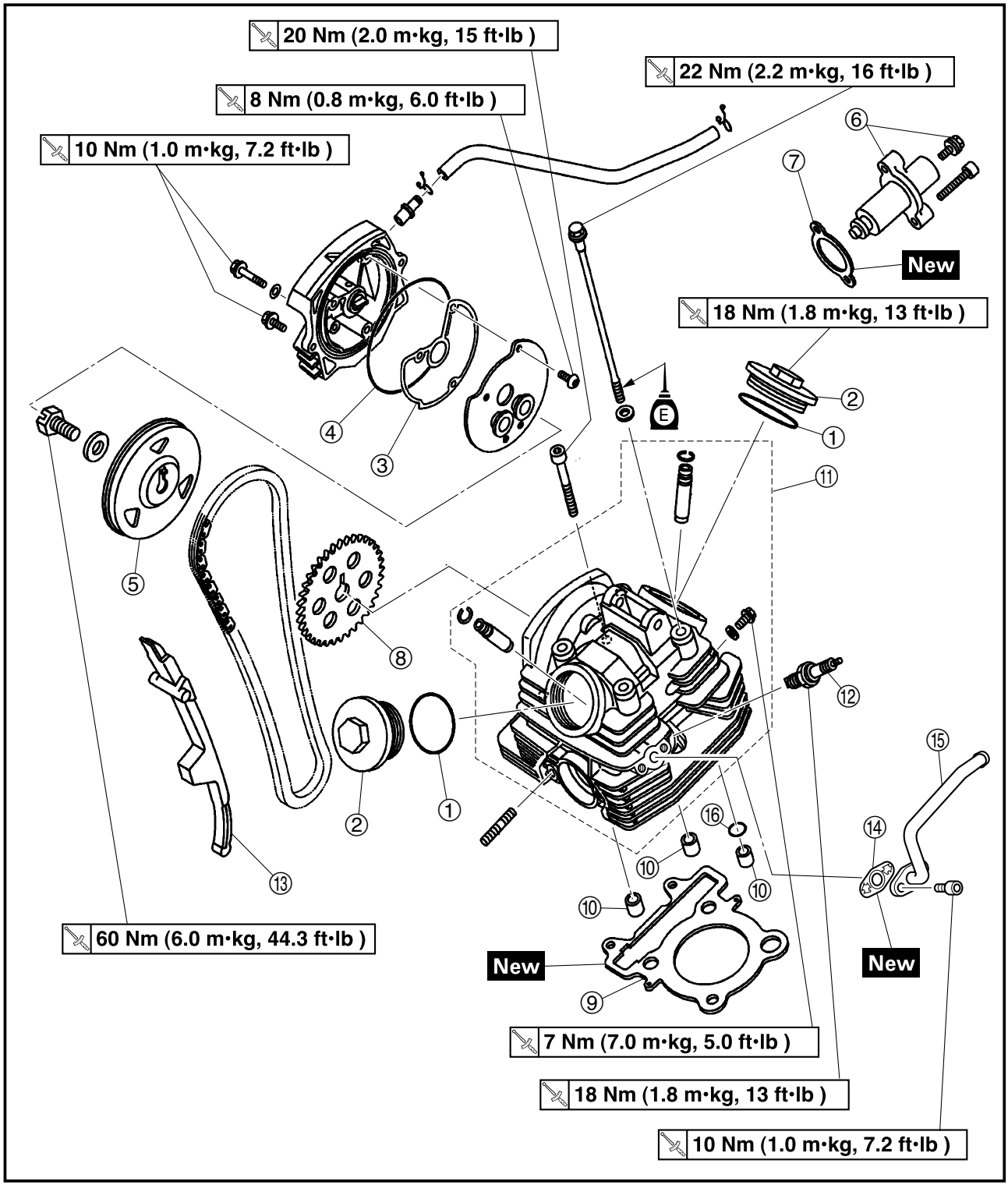


Mur (pipa pembuangan) ⑤:
18 Nm (1.8 m·kg, 13 ft·lb)
Baut (joint pipa exhaust) ⑥:
20 Nm (2.0 m·kg, 15 ft·lb)
Baut (muffler) ⑦:
30 Nm (3.0 m·kg, 22 ft·lb)

MEMBONGKAR MESIN

CYLINDER HEAD

① O-ring
② Tappet cover
③ O-ring
④ Camshaft sprocket cover
⑤ Plate
⑥ Cam chain tensioner
⑦ Gasket
⑧ Camshaft sprocket
⑨ Gasket
⑩ Dowel pin
⑪ Cylinder head
⑫ Busi/Spark plug
⑬ Timing chain guide (sisi exhaust side)
⑭ Gasket
⑮ Air induction system pipe
⑯ O-ring

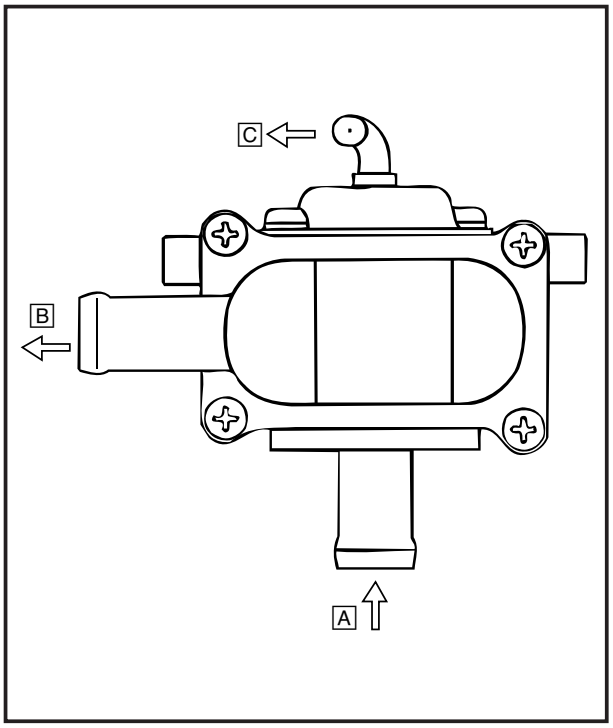

20 Nm (2.0 m·kg, 15 ft·lb)
22 Nm (2.2 m·kg, 16 ft·lb)
8 Nm (0.8 m·kg, 6.0 ft·lb)
10 Nm (1.0 m·kg, 7.2 ft·lb)
New
18 Nm (1.8 m·kg, 13 ft·lb)
60 Nm (6.0 m·kg, 44.3 ft·lb)
New
New
7 Nm (7.0 m·kg, 5.0 ft·lb)
18 Nm (1.8 m·kg, 13 ft·lb)
10 Nm (1.0 m·kg, 7.2 ft·lb)

KARBURATOR

AIR INDUCTION SYSTEM

AIR INJECTION

Air Induction System (AIS) berfungsi menetralisir bahan bakar yang tidak terbakar, dengan cara menginjeksi udara segar, ke lubang pembuangan. bertujuan untuk mengurangi kerapatan kadar emisi hydrocarbon. Jika tekanan negative timbul pada lubang pembuangan, reed valve terbuka, sehingga udara segar akan mengalir ke lubang pembuangan. Suhu untuk membakar gas buang diperlukan 600 to 700 °C.



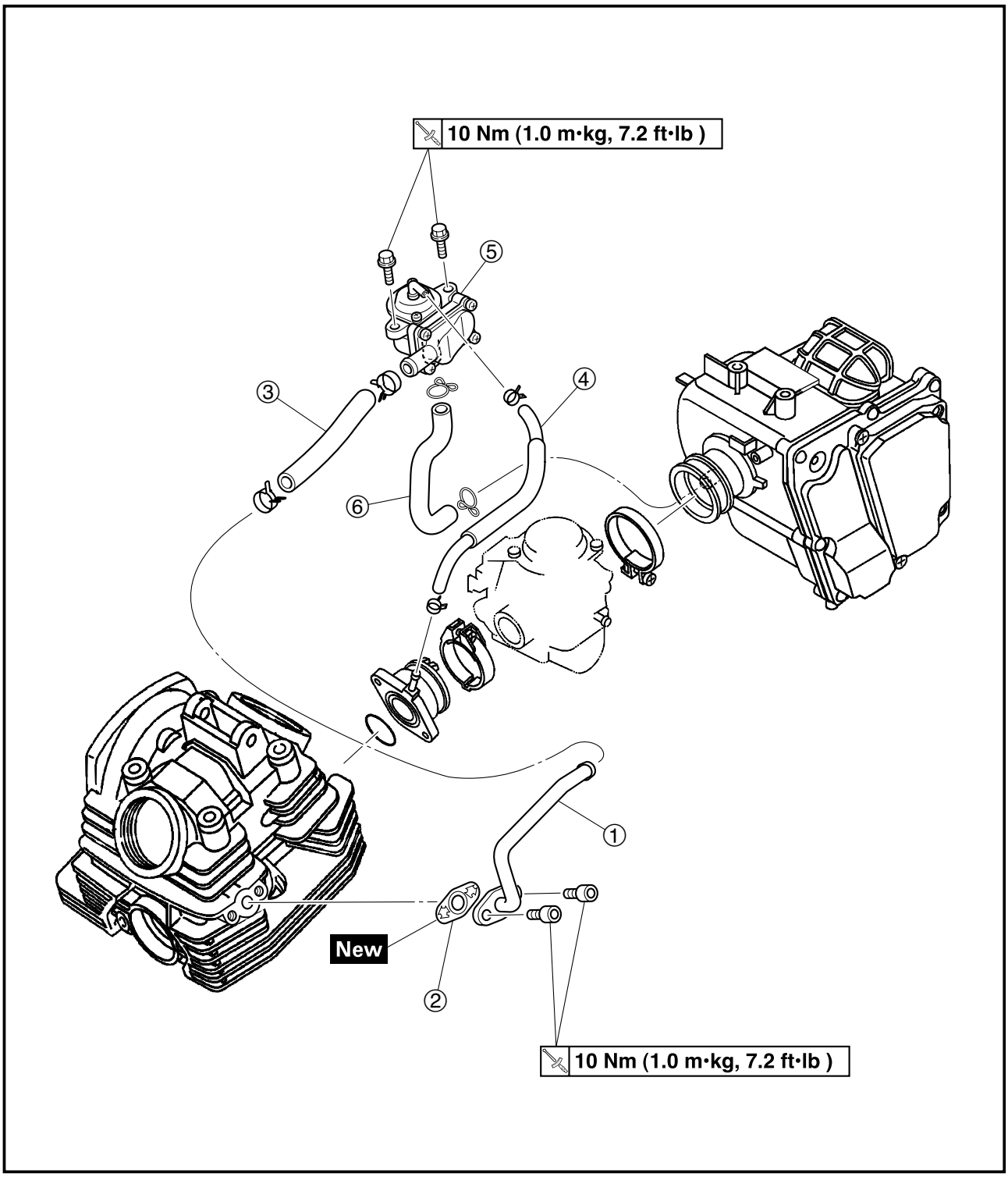
AIR CUT-OFF VALVE

Air cutoff valve bekerja karena tekanan gas pemasukan. melalui diaphragma piston valve. Dalam kondisi normal, Air Cut Valve terbuka, sehingga udara mengalir ke lubang pembuangan (A ke B). Pada saat deceleration (kondisi handel gas tiba-tiba tertutup), terjadi hisapan (negative presure) (C) sehingga Air Cut Off Valve tertutup, untuk mencegah tekanan balik, atau after burning.

Untuk itu, jika kecepatan tinggi, dan tekanan berkurang, Air Cut-Off Valve otomatis tertutup untuk menghindari tekanan balik dan hilangnya tenaga.

A Dari saringan udara/air filter
B ke cylinder head
C ke manifold pemasukan

① Pipa Air induction system
② Gasket
③ Selang Air induction system (unit air cut-off valve ke cylinder head)
④ Selang vacuum Air induction system
⑤ Unit Air cut-off valve
⑥ Selang Air induction system (unti air cut-off valve ke rumah saringan udara)

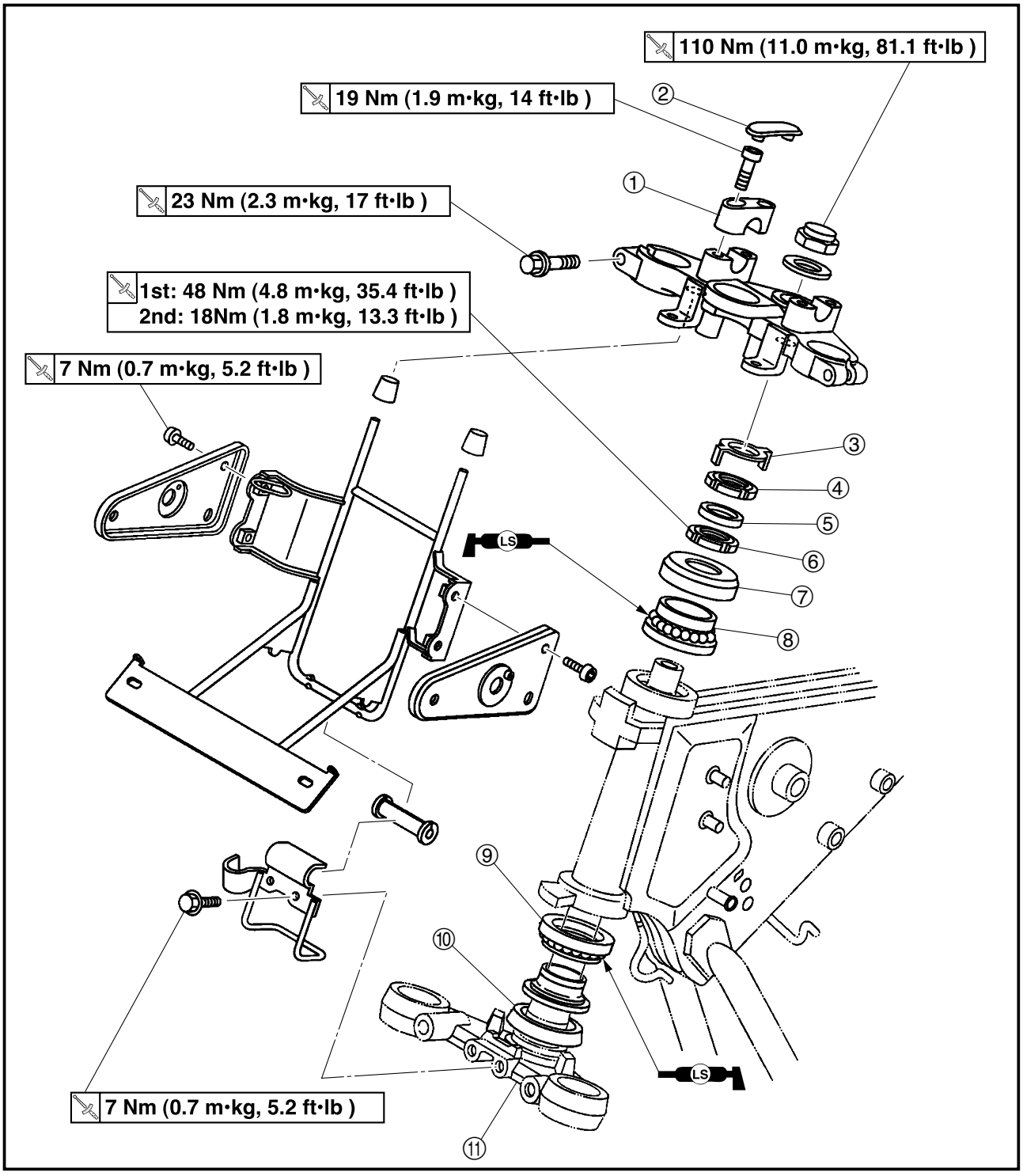


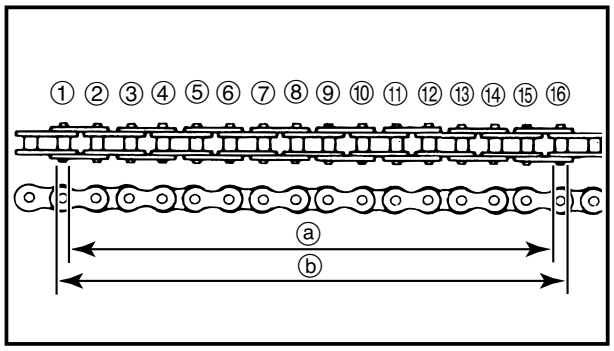
RANGKA/CHASSIS

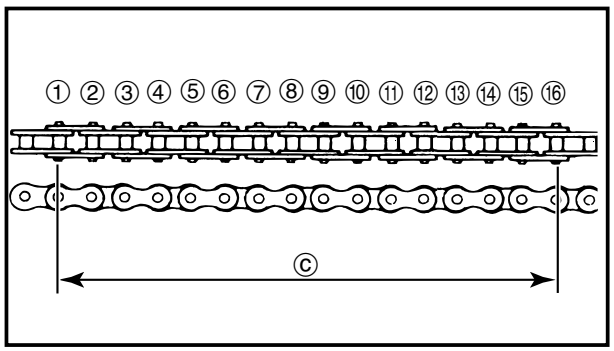
KEMUDI DAN TANGKAI KEMUDI

TANGKAI KEMUDI

① Holder tangkai kemudi
② Baut cap
③ Washer pengunci
④ Mur ring atas
⑤ Washer karet
⑥ Mur ring bawah
⑦ Penutup ball race
⑧ Bearing
⑨ Bearing
⑩ Bearing race
⑪ Bracket bawah







SHOCK ABSORBER BELAKANG DAN LENGAN AYUN

EAS00710

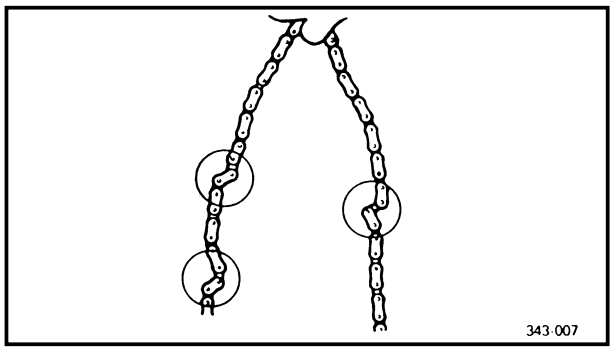
MEMERIKSA RANTAI PENGGERAK

1. Ukur :
   - Ukur panjang rantai 15 mata pada bagian dalam ⓐdan sisi luar ⓑdari pin, dan jumlahkan panjang keduanya.
   - Panjang ⓒdiantara titik tengah pin = (panjang bagian dalam ⓐ + panjang bagian luar ⓑ)/2
   - Ukur 15-mata ⓒ dari rantai
   - Diluar spesifikasi → ganti rantai penggerak gear sprocket depan dan belakang satu set

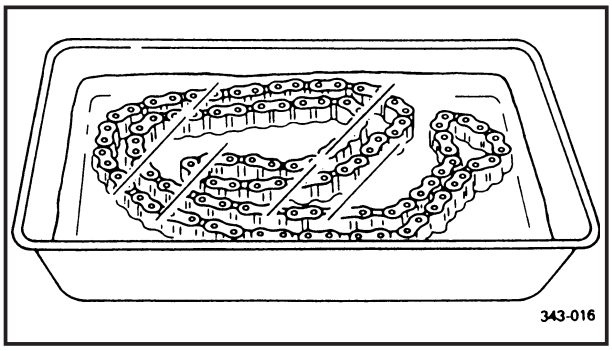
Panjang 15-mata rantai (maximum)
191.5 mm (7.54 in)

CATATAN

- Pada saat mengukur 15 mata rantai tekan rantai kedalam untuk menghindari gaya tarik.
- Lakukan pengukuran pada dua tempat yang berbeda.



2. Periksa:
   - Rantai penggerak/Drive chain kaku → bersihkan dan lumasi.



3. Pembersihan:
• Rantai penggerak / Drive chain

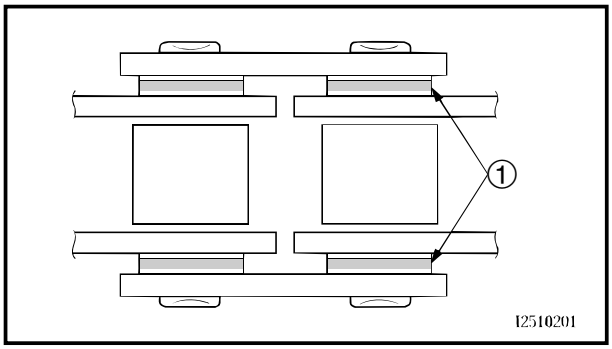
▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Bersihkan rantai dengan kain pembersih
b. Rendam rantai dalam minyak tanah, dan bersihkan kotoran dari rantai.
c. Setelah bersih, keringkan rantai dari minyaktanah dengan sempurna.

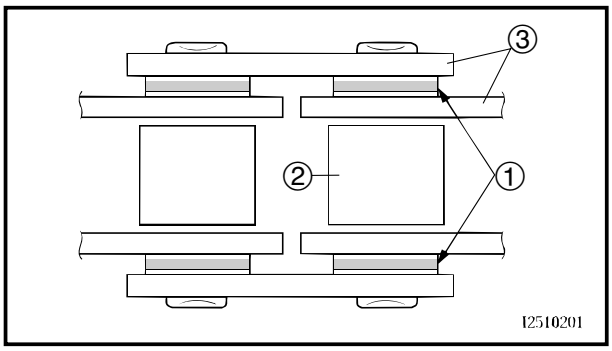
▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

PERHATIAN

Rantai sepeda motor ini menggunakan "O" ring dari karet ① yang terpasang diantara kedua plat. Jangan menggunakan udara bertekanan, bensin, dan larutan pembersih (a.l., bensin), dan jangan membersihkan rantai dengan sikat. Tekanan udara yang tinggi dan kandungan air akan merusakkan rantai pada bagian dalam, dan cairan pembersih akan merusak O-rings. begitu juga ujung sikat akan merusakkan O-rings. Untuk itu hanya minyak tanah yang diijinkan jangan merendam dalam minyak tanah lebih dari 10 menit. hal ini akan merusakkan "O" ring pada rantai.

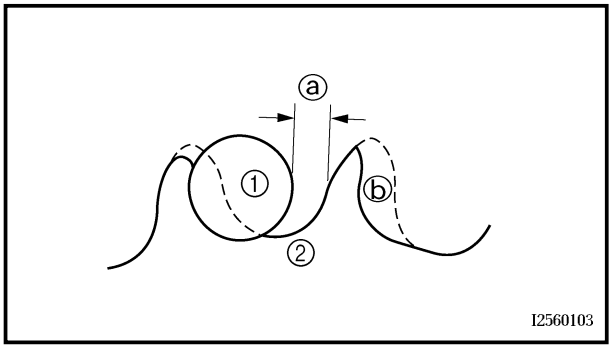


4. Periksa:
• O-rings ①
Rusak → Ganti rantai penggerak
• Roller rantai ②
Rusak/Aus → Ganti rantai
• Plat rantai ③
Retak/Aus/karat → Ganti rantai penggerak



5. Lumasi :
• Rantai penggerak

Pelumas rantai yang dianjurkan
Oli mesin atau pelumas rantai khusus untuk rantai dengan O-ring



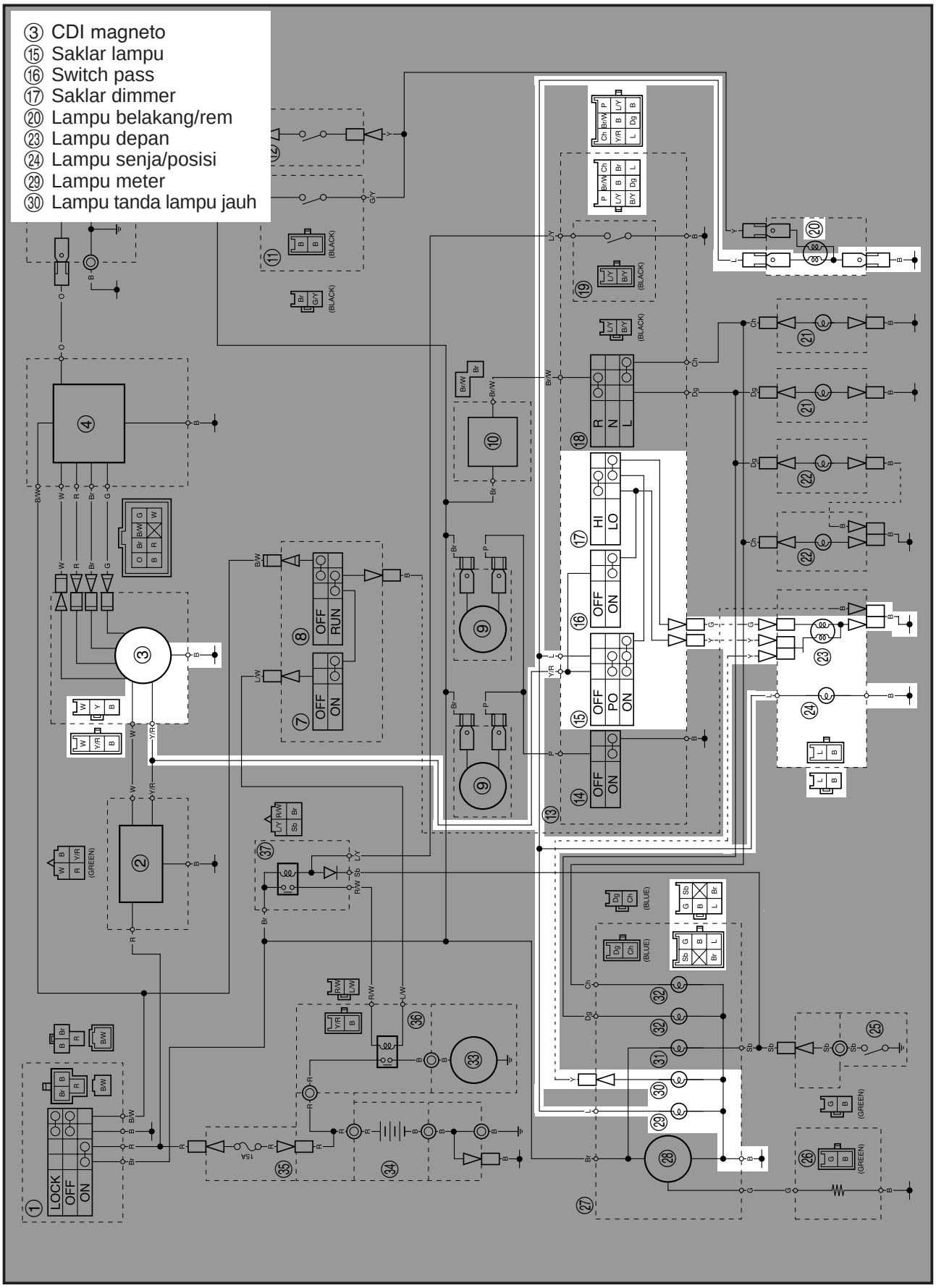
6. Periksa:
• Sprocket penggerak
• Sprocket yang digerakkan
Aus lebih dari 1/2 gigi ⓐ → Ganti rantai dan sprocket gear satu set
Gigi bengkok → Ganti rantai dan Sprocketgear satu set.

ⓑ Kondisi normal
① RIler rantai
② Sprocket gear

KELISTRIKAN

SISTIM PENERANGAN

DIAGRAM KELISTRIKAN



CARA MENGATASI MASALAH/TROUBLESHOOTING

LAMPU DEPAN, LAMPU INDIKATOR LAMPU JAUH, LAMPU BELAKANG/LAMPU METER TIDAK MENYALA

Prosedur :

Periksa;

1. Tahanan Lighting coil
2. Saklar lampu
3. Saklar dimmer
4. Saklar Pass
5. Sambungan kabel (pada sistim penerangan)

CATATAN:

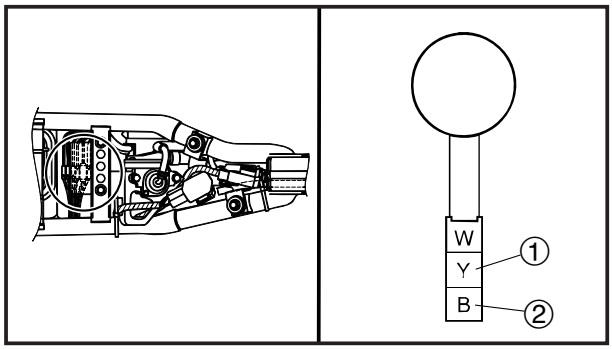
- Buka komponen dibawah ini, sebelum melakukan perbaikan
  1) Penutup samping (kanan)
  2) Lampu depan
  3) Tempat duduk
- Pergunakan alat spesial tool ini untuk perbaikan

	Pocket tester: 90890-03112

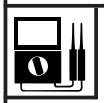
1.Tahanan Lighting coil

- Lepaskan coupler CDI magneto dari kabel bodi
- Pasangkan pocket tester (Ω×1) pada stator coil

Kabel Tester (+) → terminal kuning ①
Kabel Tester (–) → terminal hitam ②



- ukur tahanan lighting coil



Tahanan Lighting coil
0,24 ~ 0,36 Ω pada 20°C (68°F)
(Kuning - Hitam)

DILUAR SPESIFIKASI

Ganti unit stator

SESUAI SPESIFIKASI

2.saklar lampu

- Periksa sistim penyambungan saklar lampu lihat bagian “PEMERIKSAAN SAKLAR/ SWITCH”

TIDAK BAGUS

saklar lampu rusak --> ganti atau perbaiki saklar lampu (kanan).

BAGUS

*

*

3.Saklar Dimmer

- Periksa sistim penyambungan saklar - dimmer. lihat bagian “PEMERIKSAAN SAKLAR/SWITCH.

TIDAK BAGUS → Saklar Dimmer rusak --> perbaiki, atau ganti saklar kemudi (sebelah kiri).

BAGUS

4.Saklar Pass

- Periksa sistim penyambungan saklar Pass lihat bagian “PEMERIKSAAN SAKLAR/ SWITCH".

TIDAK BAGUS → Saklar Pass rusak -->perbaiki , atau ganti saklar kemudi (sebelah kiri)

BAGUS

5.Sistim penyambungan kabel

- Periksa sistim penyambungan kabel pada sistim penerangan. Lihat bagian "DIAGRAM KELISTRIKAN"

SAMBUNGAN BERMASALAH → Perbaiki

BAGUS

Periksa kondisi kabel-kabel pada sistim penerangan
lihat bagian “PEMERIKSAAN SISTIM PENERANGAN"

PEMERIKSAAN SISTIM PENERANGAN

1.lampu depan dan lampu indikator lampu jauh tidak menyala

1.Bohlam dan socket bohlam

- Periksa kondisi bohlam dan penyambungan socket
  lihat bagian "PEMERIKSAAN BOHLAM"

TIDAK ADA HUBUNGAN → Ganti Bohlam/Socket Bohlam yang rusak

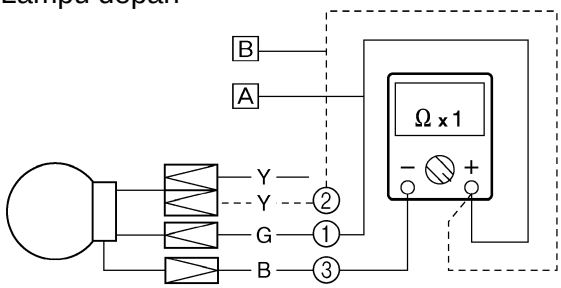
⇩ ADA PENYAMBUNGAN

2.Voltase

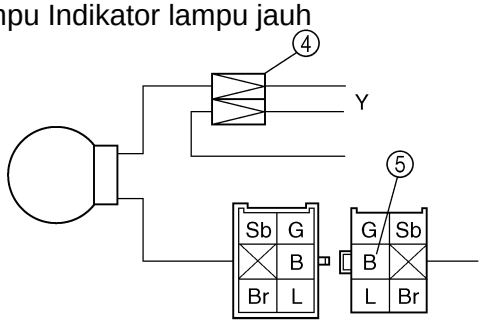
- Pasangkan pocket tester (DC 20 V) pada lampu depan dan kabel lampu indikator lampu jauh.

Lampu depan :
Kabel Tester (+) →
Kabel Kuning ② atau Hijau ①
Kabel Tester (–) → Kabel hitam ③
Lampu indikator lampu jauh :
Kabel Tester (+) → Kabel kuning ④
Kabel Tester (–) → kabel hitam ⑤

Lampu depan



lampu Indikator lampu jauh



A Jika posisi saklar dimmer “LO”
B Jika posisi saklar dimmer “HI”

- Hidupkan mesin
- geser saklar lampu pada posisi “ON”.
- Geser saklar dimmer pada posisi “LO” atau posisi "HI"
- Periksa voltase (12 V) pada kabel "hijau" atau kabel kuning pada socket connector.

DILUAR SPESIFIKASI → rangkaian kabel dari kunci kontak ke socket bohlam rusak, perbaiki.

⇩ SESUAI SPESIFIKASI (12V)

rangkaian kabel OK

2.Lampu meter tidak meyala

1.Bohlam dan socket bohlam

•periksa kondisi bohlam dan socket bohlam lihat bagian "PEMERIKSAAN BOHLAM"

TIDAK TERSAMBUNG

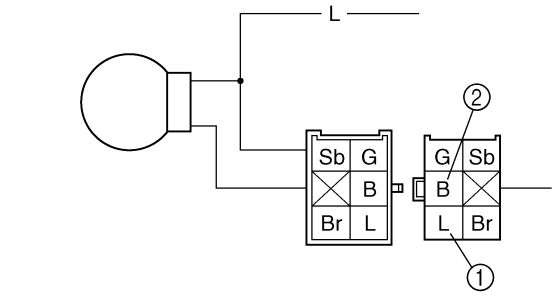
Bohlam /Socket bohlam rusak, perbaiki/ganti

TERSAMBUNG

2.Voltase

•Pasangkan pocket tester (DC 20 V) pada kabel socket bohlam.

Kabel Tester (+) → terminal biru ①
Kabel Tester (–) → terminal hitam ②



TIDAK TERSAMBUNG

•Hidupkan mesin
•Geser saklar lampu ke posisi “ON” atau “PO”.
•Periksa voltase (12 V) pada kabel "biru" pada connector socket

Rangkaian kabel dari kunci kontak ke connector rusak, perbaiki

SESUAI SPESIFIKASI (12V)

rangkaian dalam kondisi baik

3.lampu belakang tidak menyala

1.Bohlam dan socket bohlam

•Periksa kondisi bohlam dan socket bohlam lihat bagian “PEMERIKSAAN SAKLAR"

TIDAK TERSAMBUNG

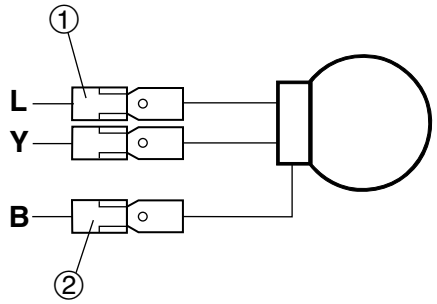
Bohlam dan socket bohlam rusak, perbaiki

ADA HUBUNGAN

2.Voltase

•Pasangkan pocket tester (DC 20 V) pada kabel socket bohlam

Kabel Tester (+) → terminal biru ①
Kabel Tester (–) → terminal hitam ②



TIDAK SESUAI

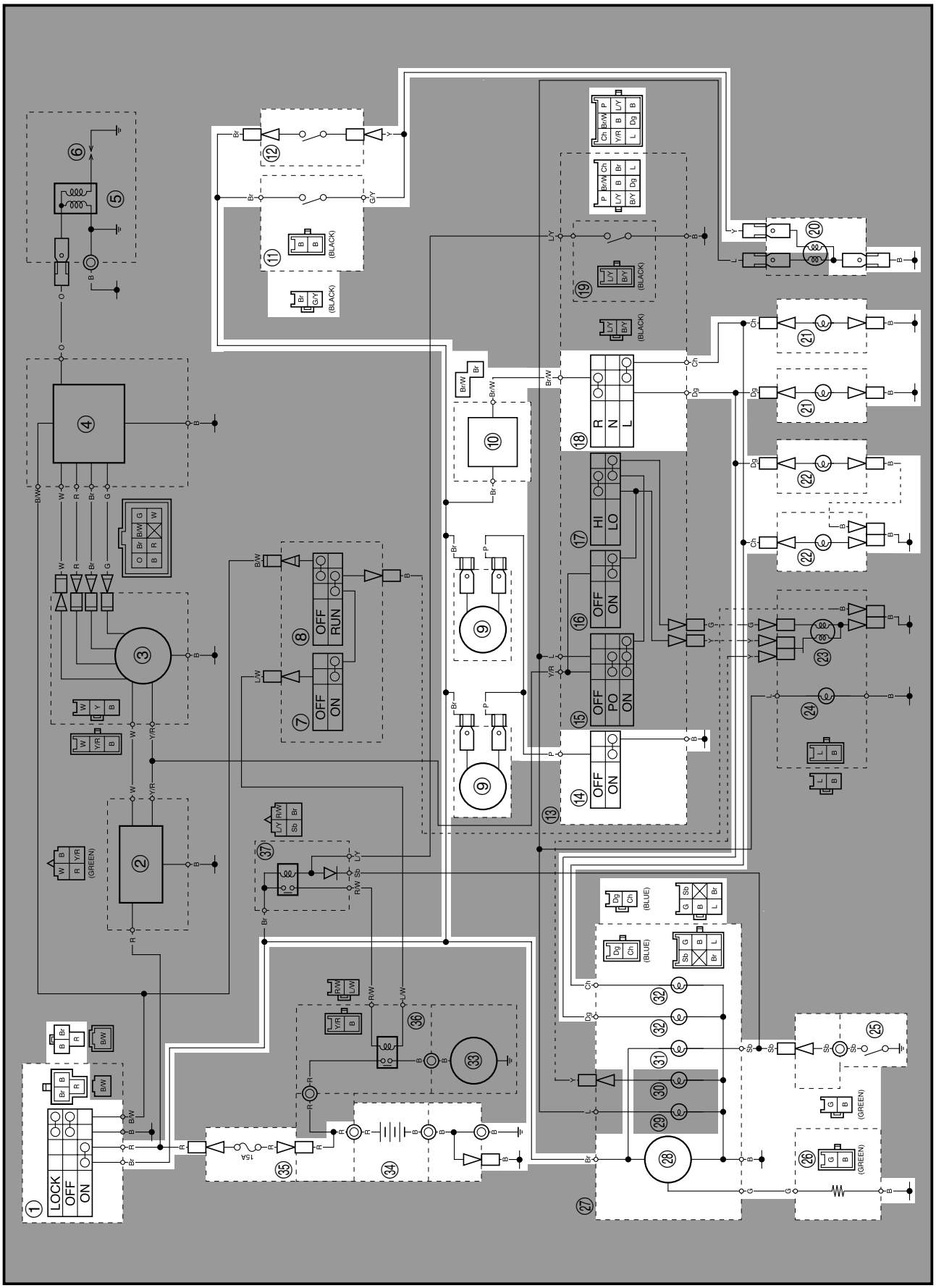
•Hidupkan mesin
•Geser saklar lampu ke posisi “ON” atau “PO”.
•Periksa voltase (12 V) pada kabel biru yang terdapat pada socket

Rangkaian kabel dari kunci kontak ke socket bohlam rusak, perbaiki.

SESUAI SPESIFIKASI (12V)

Rangkaian kabel dalam kodisi baik

SISTIM SINYAL
DIAGRAM KELISTRIKAN



① Kunci kontak
⑨ Klakson/Horn
⑩ Relay sinyal belok
⑪ Switch rem depan
⑫ Switch rem belakang
⑭ Tombol klakson
⑱ Saklar sinyal belok
⑳ Lampu belakang / rem
㉑ Lampu sinyal belok belakang
㉒ Lampu sinyal belok depan
㉕ Switch Netral
㉖ Sender bahan bakar
㉘ Meter bahan bakar
㉛ Lampu Indikator netral
㉜ Lampu indikator belok
㉞ Battery
㉟ Sekring

MENGATASI MASALAH/TROUBLESHOOTING

- **LAMPU SINYAL BELOK, LAMPU REM ATAU INDIKATOR LAMPU TIDAK MENYALA**
- **KLAKSON TIDAK BERFUNGSI**
- **METER BAHAN BAKAR TIDAK BEKERJA**

Prosedur :

Periksa :

1. Sekring
2. Battery
3. Kunci kontak
4. Sambungan kabel (pada sistim sinyal)

CATATAN

- Lepaskan komponen-komponen dibawah ini sebelum bekerja :

1) Penutup samping (kanan)
2) Lampu depan
3) Tempat duduk
4) Tangki bensin

- Pergunakan alat dibawah ini untuk perbaikan.

Pocket tester:
90890-03112

1.Sekring :

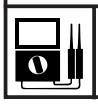
- Lepaskan sekring
- Pasangkan pocket tester (Ω×1) pada sekring
- periksa kondisi sekring
  lihat bagian "PEMERIKSAAN SEKRING" BAB 3.

TIDAK TERSAMBUNG → sekring putus, ganti sekring

TERHUBUNG ⇩

2.Battery

- Periksa kondisi Battery
  lihat bagian 'PEMERIKSAAN BATTERY" BAB 3.



Berat jenis air Battery
1,280 pada 20°C (68°F)

TIDAK SESUAI →
- Isi air Battery (botol biru)
- Bersihkan terminal Battery
- Setrom Battery atau ganti Battery

SESUAI ⇩

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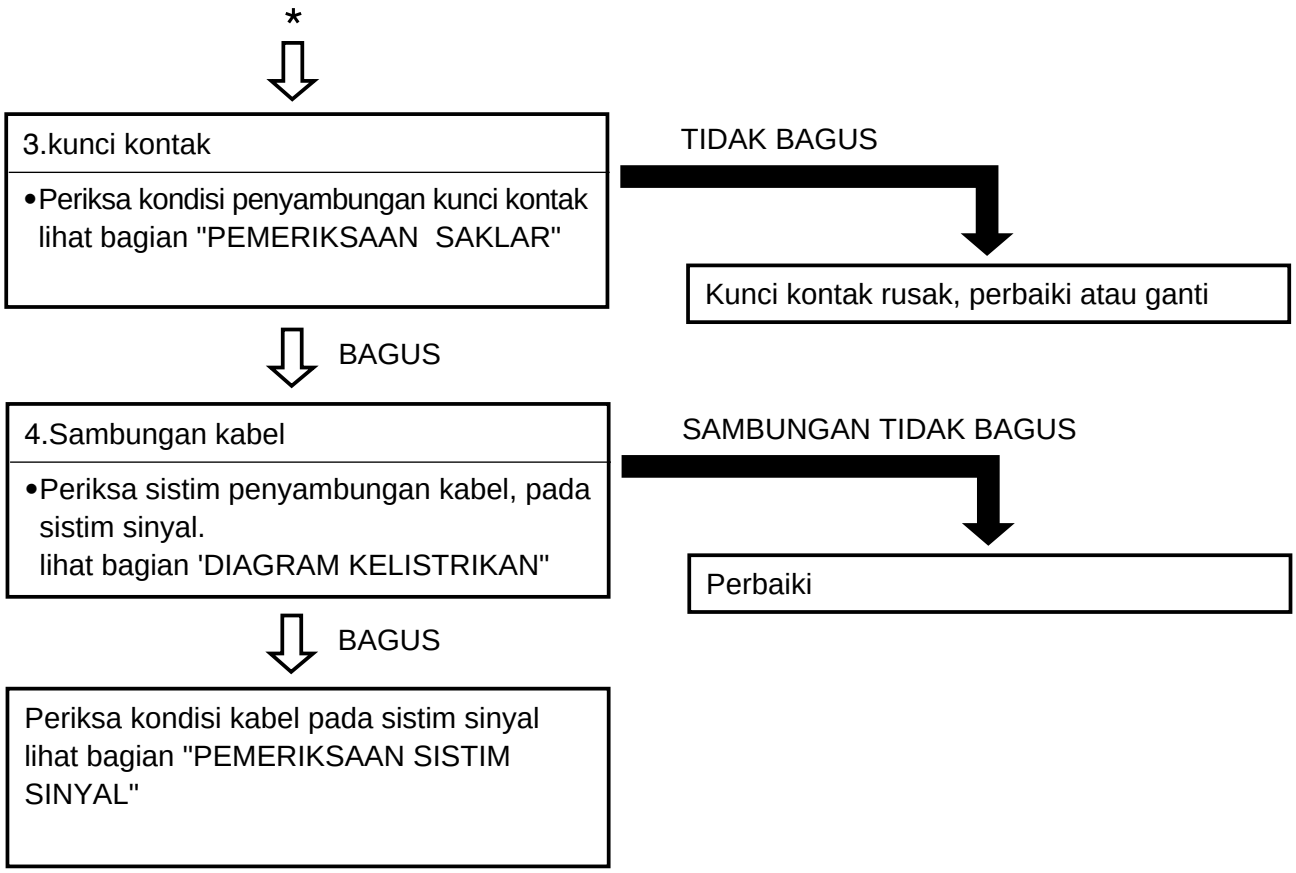

*
3.kunci kontak
•Periksa kondisi penyambungan kunci kontak lihat bagian "PEMERIKSAAN SAKLAR"
TIDAK BAGUS
Kunci kontak rusak, perbaiki atau ganti
BAGUS
4.Sambungan kabel
•Periksa sistim penyambungan kabel, pada sistim sinyal.
lihat bagian 'DIAGRAM KELISTRIKAN"
SAMBUNGAN TIDAK BAGUS
Perbaiki
BAGUS
Periksa kondisi kabel pada sistim sinyal lihat bagian "PEMERIKSAAN SISTIM SINYAL"

PEMERIKSAAN SISTIM SINYAL

1.Horn/Klakson tidak berfungsi

1.Tombol klakson/Horm

•Periksa sistim penyambungan tombol lihat bagian “PEMERIKSAAN SAKLAR"

TIDAK BAGUS

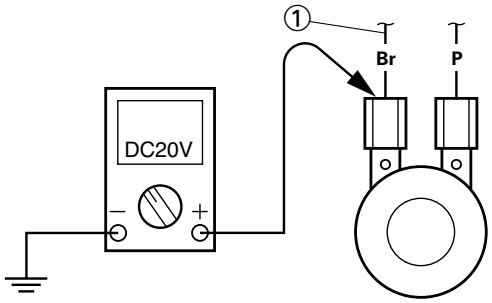
tombol klakson rusak, perbaiki, atau ganti saklar kemudi

BAGUS

2.Voltase

•Pasangkan pocket tester (DC 20 V) pada kabel klakson.

Kabel Tester (+)→ kabel coklat ①
KLabel Tester (–) → Masa/ ground



DILUAR SPESIFIKASI

Rangkaian kabel dari kunci kontakl ke terminal horn rusak, perbaiki.

•Putar kunci kontak pada posisi “ON”.
•Periksa voltase (12 V) kabel "Coklat" pada terminal klakson

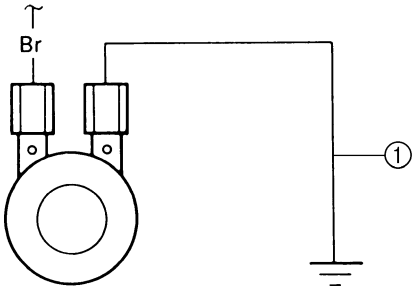
SESUAI SPESIFIKASI (12V)

*

*

3.Klakson/Horn

- Lepaskan kabel warna “Pink” dari terminal klakson/horn
- Pasang kabel penghubung ①pada terminal dan hubungkan ke masa/ground
- Putar kunci kontak pada posisi “ON”.



KLAKSON BERBUNYI

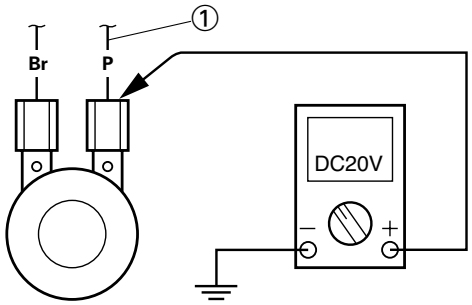
Klakson dalam kondisi baik

KLAKSON TIDAK BERBUNYI

4.Voltase

- Pasangkan pocket tester (DC 20 V) pada terminal klakson

Kabel Tester (+) → kabel Pink ①
Kabel Tester (–) → Masa / ground



DILUAR SPESIFIKASI

Klakson dalam kondisi rusak, ganti/perbaiki

- Putar kunci kontak pada posisi “ON”.
- Periksa voltase (12 V) pada terminal kabel "Pink" (merah jambu)

SESUAI SPESIFIKASI (12V)

Setel atau Ganti Horn

2.lampu rem tidak menyala

1.Bohlam dan socket bohlam

- Periksa kondisi Bohlam dan Socket bohlam lihat bagian "PEMERIKSAAN BOHLAM"

TIDAK TERHUBUNG/PUTUS → Bohlam dan Socket putus, ganti

⇩ ADA HUBUNGAN

2.Saklar / Switch rem

- Periksa kondisi switch rem lihat bagian "PEMERIKSAAN SAKLAR"

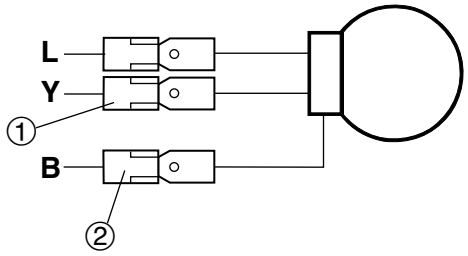
TIDAK BAGUS → Switch rem rusak, ganti

⇩ BAGUS

3.Voltase

- Pasangkan pocket tester (DC 20 V) pada socket bohlam.

Kabel Tester (+) → terminal kabel kuning ①
Kabel Tester (–) → terminal kabel hitam ②



- Putar kunci kontak pada posisi “ON”.
- Tarik tuas rem, atau injak pedal rem hingga posisi berhenti di bawah
- Periksa voltase (12 V) pada kabel kuning pada socket bohlam.

DILUAR SPESIFIKASI → Rangkaian kabel dari kunci kontak ke socket bohlam rusak, perbaiki.

⇩ SESUAI SPESIFIKASI (12V)

Rangkaian kelistrikan dalam kondisi OK

3.lampu sein dan indikator lampu sein tidak berkedip

1.Bohlam dan socket bohlam

- Periksa kondisi bohlam dan socket bohlam lihat bagian 'PEMERIKSAAN BOHLAM"

TIDAK TERHUBUNG

Bohlam dan socket bohlam rusak, ganti

⇩ TERHUBUNG

2.Geser saklar pada posisi berbelok

- Periksa sistim penyambungan pada saklar lihat bagian "PEMERIKSAAN SAKLAR"

TIDAK BAGUS

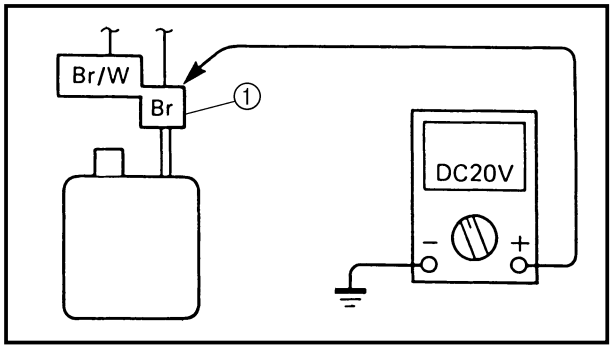
Saklar sein beloki rusak, perbaiki atau ganti saklar kemudi (kiri)

⇩ BAGUS

3.Voltase

- Pasangkan pocket tester (DC 20 V) pada relay sinyal belok

Kabel Tester (+) → terminal kabel coklat ①
Kabel Tester (–) → Masa / ground



- Putar kunci kontak pada posisi “ON”.
- Periksa voltase (12 V) pada kabel "coklat" pada terminal relay.

DILUAR SPESIFIKASI

Rangkaian kabel dari kunci kontak ke relay rusak, perbaiki.

⇩ SESUAI SSPESIFIKASI (12V)

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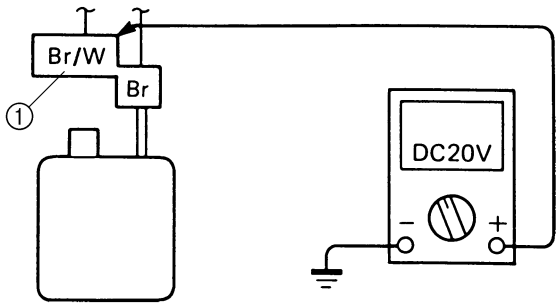
4.Voltase

•Pasangkan pocket tester (DC 20 V) pada sinyal relay belok.

Kabel Tester (+) → terminal Coklat/Putih ①
Kabel Tester (–) → masa/ground



•Putar kunci kontak pada posisi “ON”.
•Periksa voltage (12 V) pada kabel "Coklat/ Putih pada terminal relay belok.

DILUAR SPESIFIKASI

Relay sinyal belok rusak, ganti

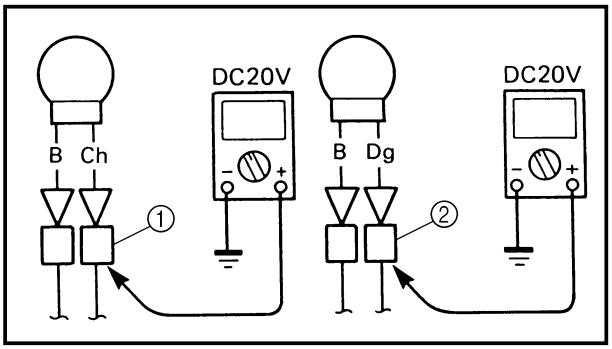
SESUAI SPESIFIKASI (12V)

5.Voltase

•Pasangkan pocket tester (DC 20 V) pada connector socket bohlam

Geser saklar sinyal (kiri):
Kabel Tester (+) → kabel coklat ①
kabel Tester (–) → Masa / ground

Geser saklar sinyal (kanan):
Kabel Tester (+) → kabel hijau tua ②
Kabel Tester (–) → Masa / ground



•Putar kunci kontak pada posisi “ON”.
•Geser saklar sein ke arah “L” atau “R”.
•Periksa voltase (12 V) pada kabel coklat atau kabel hijau tua pada connector socket bohlam

DILUAR SPESIFIKASI

rangkaian kabel dari sinyal belok ke connector sinyal belok rusak, perbaiki

SESUAI SPESIFIKASI (12V)

rangkaian kelistrikan OK

4.lampu indikator netral tidak menyala

1.Bohlam dan socket bohlam

- Periksa kondisi bohlam dan socket bohlam lihat bagian "PEMERIKSAN BOHLAM"

TIDAK ADA HUBUNGAN → Bohlam dan socket bohlam ruisak, perbaiki

ADA HUBUNGAN

2.Switch netral

- Periksa sistim kerja switch netral lihat bagian "PEMERIKSAAN SAKLAR"

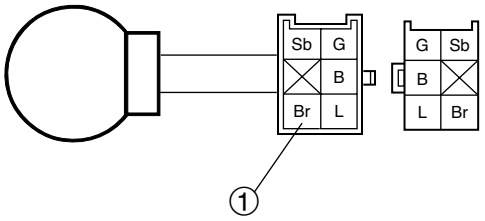
TIDAK SESUAI → Switch netral rusak, perbaiki

BAIK

3.Voltase

- Pasangkan pocket tester (DC 20 V) pada connector socket bohlam

Kabel Tester (+) → terminal coklat ①
Kabel Tester (–) → Masa / ground



- Putar kunci kontak pada posisi “ON”.
- Periksa voltase(12 V) pada kabel coklat yang berada pada connector.

DILUAR SPESIFIKASI → Rangkaian kabel dari kunci kontak ke socket bohlam rusak, perbaiki

SESUAI SPESIFIKASI (12V)

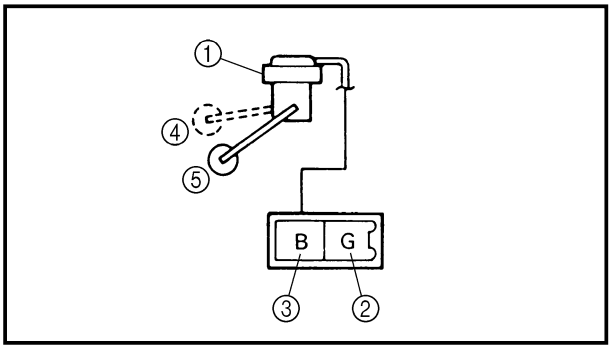
Rangkaian dalam kondisi baik

5.Meter bahan bakar tidak berfungsi

1.Sender bahan bakar

- Lepaskan sender bahan bakar ① dari tangki bensin
- Pasangkan pocket tester pada coupler sender bahan bakar.

Tester (+) lead → Green ② terminal
Tester (–) lead → Black ③ terminal



- Periksa tahanan sender bahan bakar

Tahanan sender (keatas ④):
(Ω×1)
4 ~ 10 Ω pada 20°C (68°F)
Tahanan sender (kebawah ⑤):
(Ω×1)
90 ~ 100 Ω pada 20°C (68°F)

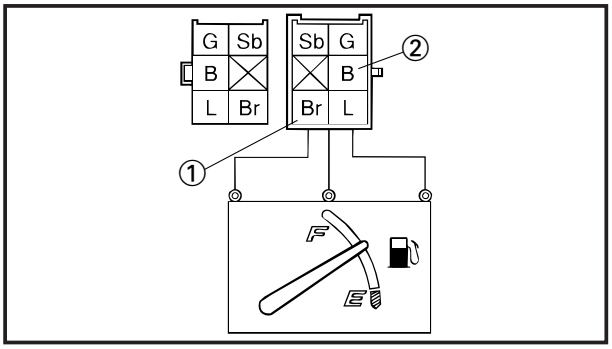
DILUAR SPESIFIKASI → Ganti sender bahan bakar

SESUAI SPESIFIKASI

2.Voltase

- Pasangkan pocket tester (DC 20 V) pada coupler meter bahan bakar.

Kabel Tester (+) → terminal coklat ①
Kabel Tester (–) → terminal hitam ②



- Putar kunci kontak pada posisi “ON”.
- periksa voltase (12 V) pada kabel coklat pada coupler meter bahan bakar.

DILUAR SPESIFIKASI → periksa sambungan kabel pada sistim sinyal.

SESUAI SPESIFIKASI (12V)

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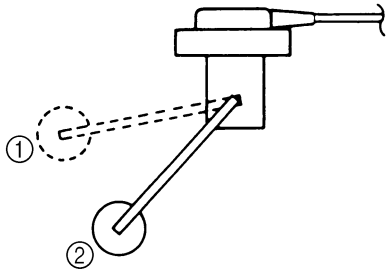
3.meter bahan bakar

- gerakkan ke “UP ①” atau “DOWN ②”.



- Putar kunci kontak pada posisi “ON”.
- Periksa pergerakan jarum ke “FULL” atau “EMPTY”.

JARUM TIDAK BERGERAK

ganti meter bahan bakar

BERGERAK

4.jalur kabel

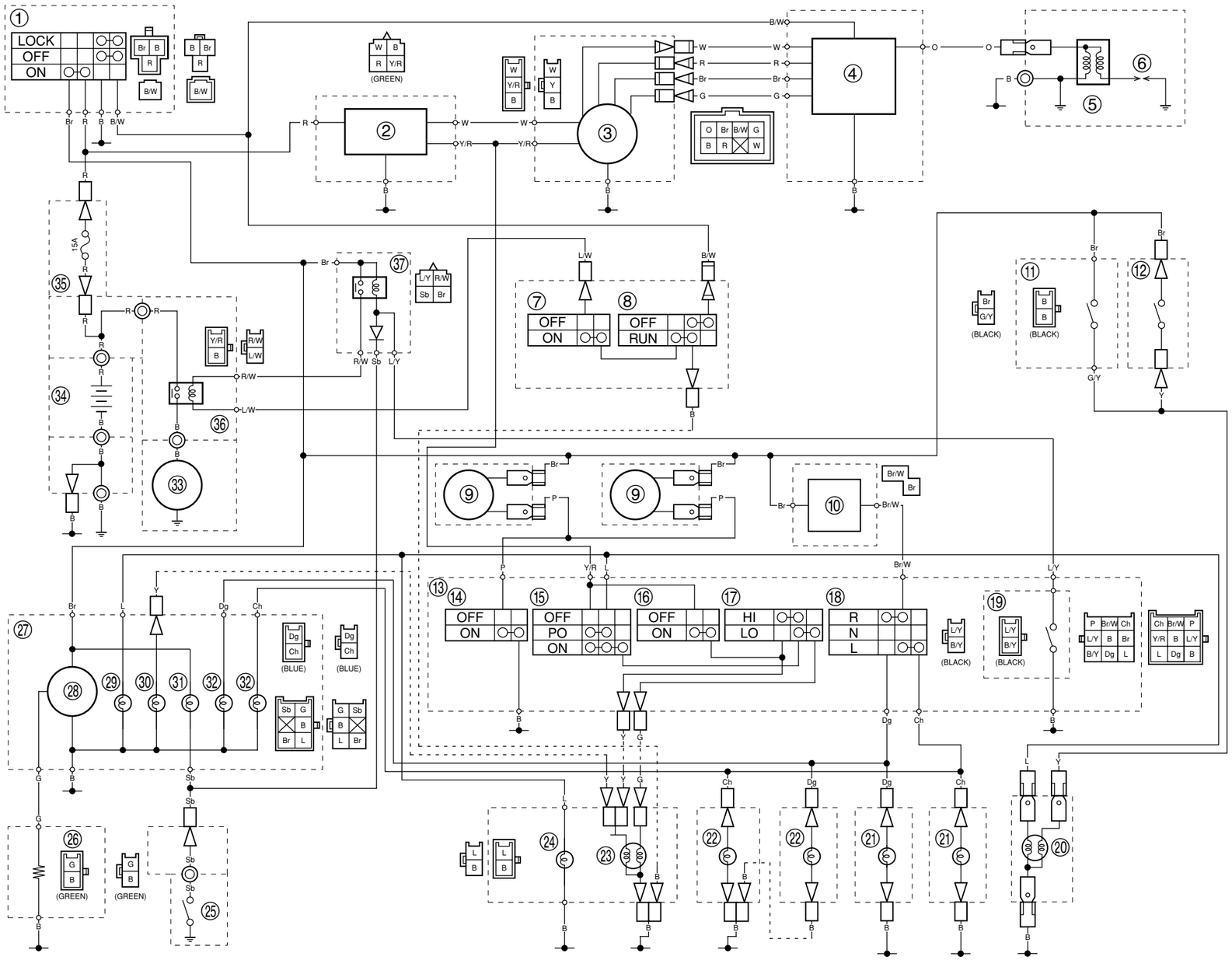
- Periksa jalur kabel pada bagian sistim sinyal
  lihat bagian 'DIAGRAM KELISTRIKAN"

CATATAN

sebelum membaca tahanan, pada posisi atas maupun bawah, biarkan terlebih dahulu pada posisinya selama 10 detik

YAMAHA MOTOR CO., LTD.
2500 SHINGAI IWATA SHIZUOKA JAPAN

DIAGRAM KELISTRIKAN SCORPIO



① Kunci kontak
② Rectifier/regulator
③ CDI magneto
④ CDI unit
⑤ Ignition coil
⑥ Busi/Spark plug
⑦ Tombol starter
⑧ Engine stop switch
⑨ Klakson/Horn
⑩ Relay sinyal belok
⑪ Switch rem depan
⑫ Switch rem belakang
⑬ Saklar kemudi (kiri)
⑭ Tombol klakson
⑮ Saklar lampu
⑯ Saklar Pass
⑰ Saklar Dimmer
⑱ Saklar sinyal belok
⑲ Switch kopling
⑳ Lampu belakang / rem
㉑ Lamjpu sinyal belok belakang
㉒ Lampu sinyal belok depan
㉓ Lampu depan
㉔ Lampu senja/posisi
㉕ Switch netral
㉖ Sender bahan bakar
㉗ Meter
㉘ Meter bahan bakar
㉙ Lampu meter
㉚ Lampu indikator lampu jauh
㉛ Lampu indikator netral
㉜ Lampu indikator belok
㉝ Motor Styarter
㉞ Battery
㉟ Sekring
㊱ Starter relay
㊲ Relay rangkaian cut-off

WARNA KABEL

B.....Hitam /Black
Br.....Coklat /Brown
G.....Hijau /Green
L.....Biru /Blue
O.....Orange
P.....Merah Jambu/Pink
R.....Merah /Red
Sb.....Biru langit /Sky blue
W.....Putih / White
Y.....Kuning / Yellow
B/W.....Hitam / Putih . (Black/White)
B/Y.....Hitam / Kuning. (Black/Yellow)
Br/W.....Coklat / Putih (Brown/White)
Ch.....Coklat tua / Chocolate
Dg.....Hijau tua / Dark green
G/Y.....Hijau / Kuning. (Green/Yellow)
L/W.....Biru / Putih (Blue/White)
L/Y.....Biru / Kuning.(Blue/Yellow)
R/W.....Merah / Putih (Red/White)
Y/R.....Kuning / Merah .(Yellow/Red)